GUIDE

TO THE

ARMY COMPETITIVE EXAMINATIONS

CAPT^N A. H. HUTCHINSON.

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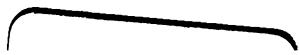
GUIDE

TO THE

ARMY-COMPETITIVE EXAMINATIONS;

BEING A COMPENDIUM OF

PRACTICAL HINTS FOR CANDIDATES

WITH REFERENCE TO

SCHOOLS, ALLOWANCE, OUTFITS,

AND

OTHER EXPENSES;

TOGETHER WITH

EXTRACTS FROM THE EXAMINATION PAPERS,

Official Rules and Regulations,

AND ALL OTHER NECESSARY INFORMATION.

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PREFACE.

HAVING been frequently applied to for advice upon the subject of Army Entrance Examinations, Schools, Outfits, Pay, &c., I thought it might be useful to collect together such information as would meet the numerous queries, even on trifling matters, which present themselves to the mind of every young man who may, for the first time, be turning his attention to the Military Profession.

Great care has been taken to procure correct and substantial details upon these various points. A minute description is given of the Chelsea Examinations, together with extracts from the Examination Papers and other statistics, most valuable to those who may have little or no acquaintance with that branch of the service to which they are about to devote themselves.

The want of such a Guide has long been felt, and it is hoped the following pages will supply the deficiency, and prove a useful and satisfactory assistant to those young men, for whose benefit they are especially intended.

Artillery Barracks,
    Woolwich.

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GENERAL REMARKS.

THE profession of Arms has always been considered most noble and most honourable, and never more so than in the present day, when a considerable change has taken place in our military system. The standard of attainments, which an officer is expected to reach, has been recently raised to a very high degree. Hence a careful education, more or less scientific, must now be combined with the natural qualities of bravery, energy, and decision, to form a leader who shall possess the confidence, as well as the affection, of those he may be called upon to command.

Nor is this the only change which the progress of time has effected in our Army administration. The exclusive character of the nomination system, which for so many years restricted the patronage of the Army to a favoured class of individuals, has been extensively modified, and the new competitive system has placed the highest prizes within the grasp of the successful candidate.

For, as soon as he has completed a service of three years with his Regiment to the satisfaction of his Commanding Officer, he is at liberty to become a student in the Staff College should he be successful at the entrance Examination, and, after studying there for two years, is qualified for an appointment upon the Staff, and may thus gradually rise in his profession, until his talents and energy meet with their reward in some post of honour and distinction.

Even before the Army was thrown open by the Competitive system, how many rose to fame and important commands, unaided by interest in high places, helped forward solely by their own merit and exertions.

For instance, in our own day.

Sir Charles Napier, Sir Harry Smith, Lord Clyde, General Havelock, Sir R. Dacres, Sir Harry Jones, Sir Henry Lawrence, Colonel Edwardes, and many others.

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Let the success of these encourage young men now entering the Army to make Duty their watch-word from the very commencement, so that, at some future day, their names also may be held in affectionate remembrance by their grateful countrymen.

HINTS TO CANDIDATES.

It is always advisable that a young man should, if possible, undergo a special course of training in some good military school, before offering himself as a competitor at any of the Entrance Examinations for the Army. He should devote himself entirely to the particular branch of the Service he may wish to enter, giving himself sufficient time to go steadily and carefully through the groundwork of each subject.

Many candidates have failed by not getting the required number of marks in pure mathematics, although perhaps they may have done well in mixed,—thereby shewing that their preparation has been loose and hurried, and that they have been crammed at the last moment to enable them to compete.

The practice of cramming cannot be too strongly condemned. The murder will out, as soon as the Cadet finds himself opposed to those who may be better prepared. He is continually passed over,—his stay at the College is indefinitely prolonged, (causing great additional expense to his friends,) and, to crown all, he may be unable to pass the final Examination within the prescribed time, and thus be obliged to give up all hopes of obtaining the desired commission.

Besides the Army classes which are now formed in all our large Public and Grammar schools, several private establishments, (with terms varying from £80 to £100 per annum), as well as private tutors, have sprung up to prepare the numerous candidates, who now flock to the Army Examinations.

It is not fair always to condemn a school because its pupil does not stand high on the list of the successful candidates. His inferior position may proceed from nervousness at the Examination, or other causes, and yet, notwithstanding his apparent deficiency, he may in reality be so well grounded, that, at the next trial, he will distance those who passed in before him at the Entrance Examination, but whose superiority at that time was possibly the result of a cramming preparation, the superficial character of which will be plainly discernible in after contests.

Should the candidate possess a nervous temperament it would be a good plan for his instructor to put him through a private examination beforehand, giving him papers and

limiting him to time, exactly in the same way as he will afterwards be treated at Chelsea. This will give him confidence when the time arrives, so that, instead of being excited and flurried, he will go through the ordeal, quietly and composedly.

Although a very slight knowledge of French and German is required at the Entrance Examinations, yet, before a cadet receives his commission he must have made considerable progress in the acquirement of these languages, and the best way of accomplishing this is by a short residence abroad. It might therefore be found useful for the successful candidate to pass his vacations in France and Germany respectively, domiciling himself in families where but little English is either spoken or understood.

All Army Examinations are conducted at Chelsea, under the superintendence of the Council of Military Education; and the instruction of the Officers in Her Majesty's Army, except in the case of those who may obtain direct appointments, is confined to the Royal Military Academy at Woolwich, and the Royal Military College at Sandhurst. The Royal Indian College at Addiscombe has been closed in consequence of the dissolution of the Honourable East India Company. The education of the Cadets of the Royal Marines is carried on, on board H. M. Gunnery Ship "Excellent," at Portsmouth.

COMPETITIVE EXAMINATIONS AT CHELSEA HOSPITAL.

The following is a brief account of the manner in which the Examinations are carried on at Chelsea.

On the morning of the appointed day the Candidates are shown into the Examination Hall, and called out 20 or 30 at a time in alphabetical order, to have their height taken and noted. They are then conducted to the room set apart for the medical inspection, where three Examiners—Medical Officers of the Army of skill and experience—divide the numbers between them. Each candidate approaches in turn and is closeted alone with the Medical Officer, who examines his sight to see whether there be any defect in his vision, though short sight is not a fatal objection if it can be remedied by the help of glasses. His chest is next sounded, as disease of

the lungs could not be passed over, neither would deafness, rupture, varicose veins, club feet, severe stammering, or loss of a finger; but before the Candidate can be recommended to the Council for dismissal on account of any bodily infirmity, the three Medical Officers must form a board and hold a consultation upon his case.

The Candidates are no longer required to strip entirely as in former times.

At the close of the medical inspection the Candidate is free for the remainder of the day.

The next morning a number is given to each as he enters the Hall, which is to be placed at the head of all his papers instead of his name.

Every book or paper for reference, must be left outside—an order strictly enforced, for it has happened that books, &c. having been found in the possession of a Candidate when in the Hall, he has been at once requested to leave, and his name struck off the list of competitors.

The Hall contains 3 rows of tables, one along each side and the other down the centre. Each table is partitioned off into 3 parts by sideboards about 2 feet high, upon which are painted numbers corresponding to those given to the Candidates on entering, so that they have no difficulty in finding their seats, which they occupy during the whole of the Examination.

A book of plain white paper is laid upon each desk every day, on the outside of which the Candidate is requested to be very particular in placing his number.

As soon as the appointed hour has struck, the Examiner, or one of the Council of Military Education, hands round a paper of questions to each Candidate, who loses no time in answering as many as he is able. He is at liberty to deliver up the result of his labours as soon as he pleases, but he must do so at the expiration of the allotted time.

At first sight the questions will generally appear difficult, although they may not really be so, but the Candidate is recommended to read carefully the entire paper, and to begin by answering those he may know perfectly, leaving the others until he has leisure to attend to them; otherwise he is apt to get flurried if he remains too long pondering over one of the early questions, and to imagine that he will not have sufficient time to try his hand at the remainder.

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ALLOWANCES, OUTFIT, PAY, PRICE OF COMMISSIONS.

No young officer on first joining his regiment can live upon his pay, without undergoing very great privations and difficulties, as the expenses connected with his mess, servant, &c. &c. would leave little or no surplus at the end of the year to provide himself with clothes and other necessaries. It is therefore desirable that some assistance should be granted him by his parents or guardians, to enable him to live respectably, and to keep up his position in society as an officer and a gentleman.

In the Artillery, Engineers, and most regiments of Infantry, £60 per annum would be sufficient. With this any careful young officer could procure every suitable comfort he may require, leaving, however, no margin for either luxury or extravagance. Nor is it at all necessary or desirable that such should be indulged in ; for the age is now gone by when it was supposed that officers of the army lived only for pleasure and amusement, forgetting alike the God who made them and the Saviour who died for them.

The lives of Hedley Vicars, Hammond and Havelock, have been the principal means of destroying this erroneous idea; while many others, following close upon their footsteps, are now to be met with in all branches of Her Majesty's Service.

In the Guards, Cavalry, and some regiments of Infantry, it would be quite impossible for the young officer to live in the same way as his brother officers upon so small an allowance as £60 per annum. It must therefore be increased, in order that he may be able to meet the extra expenses caused by the style of living, &c. kept up in the regiment in which his lot is cast.

This rule, however, does not apply to the officers of the Royal Marines, whose expenses, especially when on board ship, are generally less than those of the rest of the Army ; they may, therefore, if careful and prudent, manage to live on their pay.

Neither is any allowance necessary in India or China, where additional pay is granted to enable the officer to meet all the extra demands of those tropical climates.

OUTFIT.—In choosing the necessary outfit, with which every officer is obliged to provide himself on obtaining his commission, before he can join his regiment, it is not at all wise to purchase the cheapest articles of their kind. Bad cloth soon wears out, inferior furniture opens at the joints and becomes almost useless in a hot climate; but if the best goods are bought at first, they will be by far the cheapest in the long run. It would be as well perhaps to get as few clothes as possible at starting, as a young officer may soon grow out of them.

The following is a list of those things which are indispensably necessary. The outfit is supposed to be for an officer in an ordinary Infantry regiment; one for the Marines would cost about the same, for the Artillery and Engineers, £15 more, and for the Cavalry very much more, varying in the different regiments. The prices are taken from the estimate of a good tailor who supplies the best cloth, and from one of the first furniture outfitters :—

		£	s.	d.
Tunic complete	. . .	9	0	0
Braided frock .	. . .	5	10	0
Shell jacket .	. . .	4	10	0
Regimental cloak	. . .	6	0	0
„ trousers	. . .	2	2	0
„ „ undress regulation		1	15	0
Sash for shoulder	. . .	3	0	0
Waist belt	. . .	2	10	0
Sword	. . .	3	10	0
Sword knot	. . .	0	15	6
Cap .	. . . .	1	10	0
Chaco	. . .	4	0	0
Silk stock .	. . .	0	4	6
Best buckskin gloves	. .	0	6	0
		44	13	0
Portable iron bedstead with bedding complete in chest and valise	.	12	0	0
Mahogany drawers, brass bound, patent lock, and chests to form wardrobe (portable)		10	10	0
Carried over		£67	3	0

	£	s.	d.
Brought forward	67	3	0
Easy Douro chair, green leather, chest forms table and cupboard, (portable)	5	5	0
A solid leather case for blacking, and shoe, cloth, and hat brushes	1	18	6
Mahogany washhandstand in tub	4	16	0
Portable looking-glass	1	1	0
Dutch carpet and hearth rug	3	5	0
Glove trees 7s 6d, 2 pillow cases 3s 6d	0	14	6
2 pair linen sheets, 18s	1	16	0
3 table napkins 3s, 6 dusters 3s 9d	0	6	9
	£86	5	9

PAY.—The following is the amount of full pay received by Officers in the various branches of the Army.

ANNUAL PAY OF COLONELS.

CORPS.	If appointed on or before the 31st March, 1834.	If appointed after the 31st March, 1834
Life Guards and Horse Guards, *without other emolument*	£ 1800	£ 1800
1st Dragoon Guards (*in lieu of emoluments from Clothing* 800l.)	1100	1000
Other Regiments of Cavalry (do. 450l.)	1000	900
Grenadier Guards (do. 1000l.)	1200	1200
Coldstream and Scots Fusilier Guards (do. 1000l.)	1000	1000
Regular Infantry (do. 600l.)	600	500
West India Regiments (do. 600l.)	—	500

DAILY PAY OF OFFICERS.

RANKS.	Life Guards and Horse Guards.			Foot Guards.			Dragoon Guards and Dragoons.			Foot.			Royal Artillery Horse Brigade.			Royal Artillery Foot.			Royal Engineers.			Royal Marines.		
	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d
Colonel Commandant	1	9	2				1	3	0				3	0	0	2	14	9½	2	14	9½	1	18	6
Colonel 2nd Commandant			5										1	12	4	1	6	3	1	6	3	1	0	0
Colonel			1										1	7	1	0	18	1	0	18	1	—		
Lieut. Colonel	1	4		1	6	9	1	3	0	0	17	0	1	7	1				1	18	1	0	17	0
Major	0	15		1	3	0	0	19	3	0	16	0	0	16	1	0	11	1	0	11	1	0	16	6
Captain	0	10	4	0	15	6	0	14	7	0	11	7	0	18	1	0	13	1	0	13	1	0	11	7
Do. having higher Rank by Brevet										0	13	7				0	6	10	0	6	10	0	13	6
Lieutenant	0	10	4	0	7	4	0	9	0	0	6	6	0	9	10	0	6	10	0	6	10	0	6	6
Do. after 7 years' service										0	7	6	0	10	10	0	7	10	0	7	10	0	7	6
Cornet and Ensign	0	8	0	0	5	6	0	8	0	0	5	3				0	5	7	0	5	7	0	5	3
Paymaster { On Appointment							0	8	0	0	12	0												
After 5 years' service							0	12	6	0	15	6												
15 do.							0	15	0	0	17	0												
20 do.							0	17	0	1	0	6												
25 do.							1	0	0	1	2	6												
Adjutant { On Appointment	0	13	0	0	10	0	0	10	0	§0	3	6	†0	10	8	0	18	6	0	10	0	0	16	6
After 10 years' service	0	9	6	0	8	6	0	8	0	0	8	6							0	8	0	0	6	6
Quar. Mast. 15 do.				0	10	0	0	12	0	0	10	0	10	10	10	0	7	10				0	4	8

† If 2d Capt. 17s 9d.   ‡ If 2d Capt. 12s 9d.   § In addition to the pay as a Subaltern.

PRICE OF COMMISSIONS.—The following Table shows the prices of Commissions in the several regiments where the purchase system is in force.

RANK.	Full Price of Commissions.	Difference in value between the several Commissions in succession.	Difference in value between Full and Half-pay.
	£.	£.	£. s. d.
Life Guards.			
Lieutenant-Colonel . .	7250	1900	
Major	5350	1850	
Captain	3500	1715	
Lieutenant	1785	525	
Cornet	1260		
Royal Regiment of Horse Guards			
Lieutenant-Colonel . .	7250	1900	
Major	5350	1850	
Captain	3500	1900	
Lieutenant	1600	400	
Cornet	1200		
Dragoon Guards and Dragoons.			
Lieutenant-Colonel . .	6175	1600	1533 0 0
Major	4575	1350	1352 0 0
Captain	3225	2035	1034 3 4
Lieutenant . . .	1190	350	632 13 4
Cornet	840		300 0 0
Foot Guards.			
Lieutenant-Colonel . .	9000	700	
Major, with rank of Colonel	8300	3500	
Captain, with rank of Lieu-tenant-Colonel . .	4800	2750	
Lieutenant, with rank of Captain	2050	850	
Ensign, with rank of Lieu-tenant	1200		
Regiments of the Line.			
Lieutenant-Colonel . .	4500	1300	1314 0 0
Major	3200	1400	949 0 0
Captain	1800	1100	511 0 0
Lieutenant	700	250	365 0 0
Ensign	450		150 9 0
Fusilier Regiments & Rifle Corps			
First Lieutenant . . .	700	200	365 0 0
Second Lieutenant . . .	500		200 0 0

WOOLWICH.

In consequence of the amalgamation of Her Majesty's Royal and Indian Armies, the Military College at Addiscombe, where so many of our Indian Officers have been educated, is about to be closed, and the Royal Military Academy at Woolwich is now the door through which all must pass who are desirous of obtaining a commission in either of the scientific corps, as the Royal Regiment of Artillery and corps of Royal Engineers are generally styled.

The Academy is a large and handsome building lying at the foot of Shooter's Hill, on Woolwich Common. It has lately received extensive additions in the shape of two large wings, by means of which it is hoped in time to allow a single room to each of the senior cadets. At present there are four in each room; the situation is healthy, there is a good parade and cricket ground as well as racket courts, work shops, &c. &c. It is rather more than a mile from the Woolwich Arsenal station of the North Kent Railway.

The Competitive Examinations are perfectly free and unfettered, no permanent list being kept and no nomination required, so that any young gentleman of a proper age may present himself as a candidate for a cadetship.

On account of the high estimation in which the scientific corps have always been held, and the promotion therein being by seniority and not by purchase, the number of competitors is so great, that they always exceed, by very many, the vacancies they desire to occupy; consequently the test to which the candidate is subjected is proportionately severe, as will be seen in the extracts from the Examination papers.

The average time of residence of each cadet at the Royal Military Academy, before he receives his commission, is from one year and six months to three years. Hence it follows that his expenses while at that institution would be about £400, should he be the son of a private gentleman. If his father however be an officer in the Army, Navy, Civil Departments connected with either, or Permanent Militia Staff, they would be considerably less; and, after paying for his outfit, no other heavy outlay would be required as long as he remained in his regiment.

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The Examinations of which due notice is always given in the Daily newspapers, generally commence in the first week in January and the first week in July, and continue for about fourteen days; the successful candidates join the Academy about the 8th of the following month.

The books now in use at the Academy are:

Mathematics.—A course prepared expressly for the R.M.A.
Logarithms.—Hutton's.
Fortification.—Macaulay's Treatise.
French.—Contanseau, Prosateurs et Poètes Francais.
    „   „   Dictionary.
German.—Troppaneger's Grammar.
    „   Flügel's Dictionary.
    „   Feiling's Literature.

The following is a list of the Examiners:—

Mathematics.—Rev. J. W. L. Heaviside, M.A., Canon of Norwich, and late Professor at Haileybury College.—I. Todhunter, Esq., M.A., Fellow of St. John's College, Cambridge.

Classics.—Rev. G. Rawlinson, M.A., late Fellow and Tutor of Exeter College.—Rev. O. Gordon, B.D., Censor of Christ's Church College, Oxford, and Classical Moderator.

English and History.—G. W. Dasent, Esq., D.C.L.—W. Stebbing, Esq., M.A., Fellow of Worcester College, Oxford.

French.—A. Esquiros, Esq.—C. J. Savoye, Esq., Graduate of the Universities of Heidelberg and Wurzburg, late Professor of the College of Louis le Grand.

German.—Professor Max Müller, M.A., Christ Church, Oxford, Professor in the Taylor Institution.—Rev. C. Schöll, Ph. D.

Experimental Sciences. — Professor Tyndall, F.R.S. — F. A. Abel, Esq., F.R.S.

Natural Sciences.—Warington Smyth, Esq., M.A., F.R.S.—S. P. Woodward, Esq., F.G.S.

Geometrical Drawing.—Captain Shaw, Royal Engineers, Establishment for Field Instruction, Chatham.

Landscape Drawing.—Rev. W. Kingsley, B.D., late Fellow of Sidney Sussex College, Cambridge.

Hindustani.—Professor J. Dowson, Rev. W. D. Maclagan, M.A.

Use of Surveying and Astronomical Instruments.—Major Lovell, C. B., Royal Engineers.

REGULATIONS for the Admission of Gentlemen Cadets to the Royal Military Academy, Woolwich.

N.B.—All Candidates for Commissions in the Royal Artillery and Royal Engineers are required to go through a course of instruction at the Royal Military Academy.

I. Competitive Examinations for admission will be held in London twice a-year, in January and July. They are conducted by Examiners appointed for the purpose, in the presence, and under the superintendence, of the Council of Military Education.

The Candidates must, until the Examination in July, 1861, be between 16 and 20 years of age; after that date, between 16 and 19 years of age.

II. The admissions will be determined by the result of a competitive examination, the subjects of which will be as follows, viz.—

Marks.

1. Mathematics	Pure { Including 500 for the Differential and Integral Calculus.* ... } 2500	Mixed, *i. e.*, Statics, Dynamics, and Hydrostatics.........1000	3500
2. English	Language and Composition............... 1000		
	History and Geography of England and its Dependencies.................... 1000		
3. Classics	Latin { Language 1000		
	Geography and History of Ancient Rome 500		
	Greek { Language 1000		
	Geography and History of Ancient Greece.............. 500		
4. French Language.. 1000			
5. German ditto 1000			
6. Hindustani { Hindustani Language 1000			
	Geography and History of India... 1000			

* See Syllabus annexed.

The examination in French, German, and Hindustani will include writing from dictation.

7. Experimental Sciences, *i. e.*, Chemistry, Heat, Electricity, including Magnetism 1000

8. Natural Sciences, *i. e.*, Mineralogy and Geology 1000

9. Drawing
{
Elementary Geometrical Drawing, including the use of Drawing Instruments .... } 500

Free hand drawing of Machinery, Architectural, Topographical, Landscape, or Figure Subjects .... } 500

III. No Candidate will be allowed to be examined in more than five subjects, of which one must be Mathematics, and no one who does not obtain at least 1000 marks in Mathematics, of which 700 at least must be in Pure Mathematics, will be eligible for an appointment.*

From the other subjects of examination each Candidate may select any, not exceeding four in number, in which he desires to be examined. The rules for counting marks are as follows:—

In French, German, Experimental and Natural Sciences, one-sixth of the marks allotted to each subject must be gained before it can be allowed to count.

In English, Hindustani, and Drawing, the subject is divided into two sections as above, either or both of which the candidate may take up as one subject; but he will, not be allowed to count the marks gained in either Section unless they amount to one-sixth of the number allotted to it.

In Classics, also divided into two sections (Latin and Greek), the marks appropriated to the Geography and History of Ancient Rome or Greece will not be allowed to count unless one-sixth of the marks allotted to the corresponding language has been gained, in which case, however, any number of marks gained in Geography and History will count.

In either *French, German*, or *Hindustani*, every Candidate will be required to obtain 100 marks for qualification; and in *Geometrical Drawing* 50 marks, whether he takes them up as subjects in which he desires to compete, or not.

It should be understood that though only a small qualify-

* N.B.— The Examination in Arithmetic, Algebra, Plane Geometry, Logarithms, and Plane Trigonometry, will be close and searching.

ing test has been imposed in respect to modern languages and Geometrical drawing, a knowledge of them on admission will contribute greatly to a Candidate's future success at the Royal Military Academy.

IV. The Candidates are allowed to answer as many questions as the time allotted to the subject will permit.

V. No Candidate will be admitted unless he obtain an aggregate of, at least, 2500 marks.

VI. The successful Candidates will remain under instruction for about two years and a-half, or until they are sufficiently advanced in scientific knowledge to pass a satisfactory examination, and they will then receive commissions in the Royal Artillery or Royal Engineers. If, however, they should be found unable to qualify themselves within three years, in their professional studies, or to acquire a sufficient proficiency in Military Exercises, they will be subject to removal.

VII. Each cadet, on joining, will be required to pay a sum of £25, to cover the expense of Uniform, Books, &c., and to bring with him the following Articles, which must afterwards be kept up to the required numbers, viz.:—

> 9 White Shirts.
> 4 Flannel Waistcoats.
> 9 Pairs of Socks.
> 6 Pairs of Drawers.
> 9 Pocket Handkerchiefs.
> 6 Towels.
> 1 Clothes Brush.
> 2 Combs and Brushes.
> 1 Bible and Prayer Book.
> 1 Looking Glass.
> 1 Portmanteau.

He will also be required to pay a contribution of £62. 10s., payable in advance, for each half-year of the time during which he remains under instruction. The annual contributions however, for sons and orphans of Naval and Military Officers, will be regulated at the following rates, as heretofore:—

> For sons of Admirals and of Generals having Regiments £80

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For sons of Generals without Regiments . 70
For sons of Captains and Commanders of the Navy,
  and of Colonels and Regimental Field Officers of
  the Army 60
For sons of all Officers of the Army and Navy under
  the above Ranks 40
For sons of Officers of the Army and Navy who have
  died in the service, and whose families are proved to
  be left in pecuniary distress . . 20

The sons of General Officers paid only on their Commissions as Field Officers, will pay the same contribution as the sons of Field Officers.

The sons of Officers on Full or Half-pay, will pay alike; but the sons of Officers who have voluntarily retired on Half-Pay *or received the difference*, will only be admitted on the terms prescribed for the sons of private Gentlemen, viz., 125*l*. per annum.

The sons of Officers of the Civil Departments of the Army and Navy, of Officers of the Permanent Militia Staff, and of Adjutants of the Volunteer Force, are admissible to the Academy upon the same terms as those prescribed for Naval and Military Officers.

                                           £

The sons of Professors at the Staff and Royal Military
  Colleges, at the Royal Military Academy, and at
  the Royal Military College, Addiscombe . . 60
The sons of Masters at the above Institutions . 40

VIII. Any Gentleman who wishes to present himself at one of the half-yearly Examinations, must send in his name to the Military Secretary at the Horse Guards one month before the time of Examination, forwarding with his Application the following papers :—

    1st. An extract from the Register of his Baptism,* or, in default of that, a declaration before a Magistrate, taken by one of his parents, giving his exact age.

    2nd. A Certificate of good moral character, signed by

* NOTE.—When the Register of Baptism does not contain the date of birth, it should be accompanied by a memorandum, signed by one of his parents or guardians, stating the day on which the Candidate was born.

a Clergyman of the parish to which he belongs, and by the Tutor or Head of the School or College at which he has received his education for at least the two preceding years, or such other proof of good moral character as will be satisfactory to the Commander-in-chief.

3rd. A statement of the Subjects of Examination in which (in addition to Mathematics) he may desire to be examined.

A Candidate who has been examined before, when he applies for leave to present himself again, will only be required to forward the List of subjects he selects, and a certificate from his Tutor or the Head of his School, &c., for the interval between the two examinations.

IX. The Candidates will be inspected by Military Surgeons on the first day of the examination, that it may be ascertained that they are free from any bodily defects or ailments calculated to interfere with the performance of Military duties.

Extreme short-sight, or any serious defect of vision, is regarded as a disqualification.

W. F. FORSTER, Military Secretary.

SYLLABUS OF EXAMINATION IN THE DIFFERENTIAL AND INTEGRAL CALCULUS.

Differential Calculus.

The meaning of Differentiation.

The Differentiation of Elementary Functions of one independent variable.

The theorems of Taylor and Maclaurin, with their applications.

The theory of Maxima and Minima, with its applications.

The equations to the Tangents, Normals, and Asymptotes of Plane Curves.

The curvature of Plane Curves and their radii of curvature and evolutes.

The Differential Coefficients of the Arcs and Areas of Plane Curves to rectangular and polar Co-ordinates, and of the surfaces and volumes of solids of revolution.

Integral Calculus.

The meaning of Integration.
The Integration of Elementary Functions.
The Integration of Rational Fractions.
The determination of the lengths and areas of Plane Curves, and of the surfaces and volumes of solids of revolution.

The following rules are forwarded to each Candidate, prior to the Examination :—

Days allotted to the different Subjects of Examination.

Monday,   .   Medical Inspection of Candidates.

Tuesday,   „   { Morning—Geometrical Drawing. Afternoon—Landscape Drawing.

Wednesday, „   . French.
Thursday,   „   . German.
Friday,   „   . Hindustani Language.
Saturday,   „   . History of India.
Monday,   „   . Mathematics.
Tuesday,   „   . Mathematics.
Wednesday, „   . English.
Thursday,   „   . History and Geography.
Friday,   „   . Latin.
Saturday,   „   . Greek.
Monday,   „   . Greek and Roman History.
Tuesday,   „   . Experimental Sciences.
Wednesday, „   . Natural Sciences.

Thursday,   „   { Use of Astronomical and Surveying Instruments.

Rules to be observed at the Examination.

1. The Examination will commence on each Morning at 10½ o'clock, and on each Afternoon at 2½ o'clock; three hours being allowed for each Paper.

An interval of one hour is allowed between the Morning and Afternoon Examinations, to prevent the necessity of any Candidate leaving the room during the Examination hours.

2. During the whole of the Examination the Candidates will be designated by Numbers. On the first day a Number

will be assigned to each Gentleman, which will remain the same to the close of the Examination : and as the Examiners must be unacquainted with his Name, he must affix his Number (not his Name) to every Paper which he sends in. A Paper without a Number will not be entitled to Marks.

3. During the Examination, Candidates will not be permitted to speak to one another or to communicate with any Person, except with a Member of the Council of Military Education, or with the Examiner. The Council think it right to give notice that any Candidate infringing this Regulation, or attempting in any way to copy from the Paper of another, or allowing his own to be copied, will be immediately desired to withdraw from the Examination.

If any Candidate wish to communicate with a Member of the Council or with the Examiner, he will hold up his hand, but he will not quit his place on any pretence.

4. At the commencement of each period of Examination, *i.e.*, at 10½ o'clock in the Morning and 2½ o'clock in the Afternoon, all Candidates presenting themselves are to take their places at once, and the Examination Papers will be brought to them.

Gentlemen not present when the Papers are carried round, must go up to a Member of the Council of Military Education, and receive their Papers from him.

5. The Papers of the Candidates will be collected at the hours above stated by a Member of the Council of Military Education. Should any Candidate, however, have finished his Examination Paper before the hour specified, he may deliver it into the hands of a Member of the Council. The Council cannot be held accountable for any Paper not so delivered.

6. A Report of the Examination will be forwarded to each Candidate.

7. No Books or Papers of any kind are to be brought into the Examination Room ; and should a Candidate have either Books or Papers with him on arrival, he must leave them outside the door, where a table will be placed for the purpose. Any breach of this Regulation will lead to the immediate rejection of the Candidate so offending.

Tables of Logarithms will be supplied by the Council.

EXTRACTS FROM

EXAMINATION PAPERS.

WOOLWICH.

GEOMETRICAL DRAWING.

[The work is to be inked in, and the construction shown by
dotted lines. A portion of the Marks will be allotted to
neatness and accuracy.]

1. On a base 3 inches long, construct an equilateral tri-
angle, and in it inscribe a circle.

2. Construct an isosceles triangle on a base of 2¼ inches,
the angle at the vertex being 81° 30′.

3. Construct a regular pentagon on a base of 1½ inch and
describe a circle about it.

4. Construct a scale to measure feet and inches on a
drawing where 1 inch represents 7 feet.

5. To the above scale draw a plan, a cross section, and a
front elevation of a cottage 25 feet long, and 15 feet wide
(interior dimensions); walls 1¼ feet thick; a door in the
centre of one side 4 feet wide and 7 feet high, and a window
on each side of it 3 feet wide, 4 feet high, and 4 feet above
the ground.   The walls of the cottage are 10 feet high ; the
roof has 2 gables, and the ridge is 16½ feet above the floor.
The eaves project 9 inches.

6. Give a perspective view of an octagonal pillar 10 feet
high and 1 foot each side, standing on a square base 3 feet
each side and 1 foot thick, the faces of the base being paral-
lel to the faces of the pillar.   The eye of the observer is 5

feet above the ground and opposite to, and 10 feet distant from, an angle of the base. The sides of the base form equal angles with the picture plane which is 5 feet from the eye. Scale $\frac{1}{24}$.

Or,—

Give an isometric projection of the cottage in Question 5, omitting the roof.

Printing, in Roman characters and Italics.

LANDSCAPE DRAWING.

[N.B.—The Drawing must be entirely free-hand; no instrument or mechanical aid of any kind whatever is allowed.'
The Paper supplied must not be torn, nor must any other be used.
The Examples of Part I. should be executed, so far as the Candidate is able to do so, before those of Part II. are attempted.]

PART I.

1. Draw an equilateral triangle, a square, and a regular pentagon, having their sides each an inch long..

2. Fill the triangle with a flat wash of red, the square with a flat wash of green, and the pentagon with a flat wash of grey; the colours to match those on your paper.

3. Make a pencil drawing in light and shade, and full size of the cone placed before you.

4. Copy with pen and ink the woodcut before you.

PART II.

5. Draw from memory, with pen, pencil or sepia, the fire-bucket shown to you; and add the shadows on the supposition that you are looking at it when it is due north of you, and that the sun is exactly south-west, and has an altitude of 45°.

6. Give as complete a representation as you can of the machine, model, or object supplied to you.

7. If you are unable to draw from the solid, copy one of the drawings presented to you.

FRENCH.

Morning Paper.

I.

Traduisez en anglais :

1. Le voyageur remit ses pièces jnstificatives à l'un des gardes ordinaires qui les examina devant l'un de ces hauts personnages, pendant que l'autre assistait à la visite de sa valise.

Il se nomme Roderic, fit le premier qui suivait la lecture du passeport. Et il salua l'étudiant étonné.

Cheveux blonds, c'est cela. Yeux bleus : à merveille !.. Vingt-deux ans, parfait ! Quant à la taille, oui, oui, c'est bien la même.

2. ...... Il y a des blessures qu'on ne guérit jamais ; et, permettez-moi de le dire, le tort du roi de Prusse est trop grand pour qu'il le répare. Si Votre Altesse Sérénissime a envoyé ma lettre ostensible, elle produira une explication ; cette explication ne produira rien, parceque le roi se bornera à vouloir avoir raison.

Le Jeu et les Joueurs.

Les plaisirs sont amers sitôt qu'on en abuse :
  Il est bon de jouer un peu ;
Mais il faut seulement que le jeu nous amuse.
  Un joueur, d'un commun aveu,
  N'a rien d'humain que l'apparence ;
Et d'ailleurs il n'est pas si facile qu'on pense
D'être fort honnête homme et de jouer gros jeu.

Le désir de gagner, qui nuit et jour occupe,
   Est un dangereux aiguillon.
Souvent, quoique l'esprit, quoique le cœur soit bon,
   On commence par être dupe,
   On finit par être fripon.
                              MADAME DESHOULIÈRES.

II.

Questions grammaticales.

1. Ecrivez l'infinitif présent et le participe passé, la troisième personne du singulier de l'indicatif présent, du prétérit (passé défini), et de l'imparfait du subjonctif des verbes suivants :

   traduisez—suivait—venait—salue—écris—plais.

2. A " demi-voix" (voyez ci-dessus I, No. 1) : *Voix* étant féminin, comment se fait-il qu'il y ait *demi* et non *demie ?* Quelle est la règle au sujet de *demi* accompagnant un substantif ?

3. Quelle différence reconnaissez-vous entre : *avoir raison, avoir de la raison, avoir une raison ?*

4. Quel est le masculin de *nièce,* et quel est le pluriel de l'un et de l'autre genre ? Quel est le féminin de *roi,* et le pluriel de l'un et de l'autre genre ?

5. " . . Qu'il *fît* . . qu'il *punît* . . qu'il me *rappelât.*"— Pourquoi ces verbes sont-ils au subjonctif, et pourquoi à *l'imparfait* et non au *présent ?*

III.

Translate into French :—

From Lord Byron to Mr. Moore.

London the eighth of January,
      eighteen hundred and fourteen.

As it would not be fair to press you into a dedication without previous notice, I send you *two,* and I will tell you *why two.* The first, Mr. M., who sometimes takes upon him the critic (and I bear it from *astonishment*), says, may do you harm. God forbid! this alone makes me listen to him . . . Pray, perpend, pronounce, and don't be offended with either . . .

The first, says Mr. Moore, was, of course, the one that I preferred.

IV.

Littérature.

Qu'est-ce qu'on entend, en histoire littéraire, par *le siècle classique de la littérature française ?*

Nommez et appréciez quelques uns (au moins [quatre) des auteurs et des ouvrages les plus renommeés qui appertiennent à ce siécle.

Afternoon Paper.

I.

Traduisez en anglais :—

Il sied aux grands hommes de mourir avec modestie et aux grands peuples d'honorer avec éclat leur mémoire. L'Angleterre n'a point manqué, envers sir Robert Peel, à ce pieux devoir. Pendant que, suivant sa volonté, on lui faisait, au milieu des champs, des funérailles de village, à Londres, à Manchester, à Glasgow, à Edimbourg, à Birmingham, à Leeds, et dans un grand nombre d'autres villes, des *meetings* se réunissaient, les corporations municipales délibéraient pour lui ériger des monumens et des statues.

De quoi s'offense-t-il ? et que veut-il me dire ?
Y va-t-il de sa gloire à ne pas bien écrire ?
Que lui fait mon avis qu'il a pris de travers ?
On peut être honnète homme et faire mal des vers :
Ce n'est point à l'honneur que touchent ces matières.
Je le tiens galant homme en toutes les manières,
Homme de qualité, de mérite et de cœur,
Tout ce qu'il vous plaira, mais fort méchant auteur.

II.

Questions grammaticales.

1. Ecrivez les comparatifs et les superlatifs de *bon, bien, mal, mauvais, peu.*

2. Quelle est la troisième personne du présent de l'indicatif dans les verbes : *jeter, acheter, appeler, recéler, aller, employer, semer, balayer, régner.*

3. Quelle est généralement la place des adverbes dans une phrase française? *They often speak to me. You seldom write to us.*

4. Indiquez en anglais l'équivalent de ces gallicismes : "Vous *avez beau* dire et *beau* faire, vous ne m'ébranlerez pas. Cet écrivain *a* plus *à cœur* d'éblouir que de convaincre. Je ne comprends rien à cette énigme et je *jette* volontiers *ma langue aux chiens.* On ne peut rien lui dire qu'il ne *prenne* tout de suite *la mouche.*"

III.

Traduisez en français :—

The Battle of Killiecrankie.

At the beginning of the action Dundee had taken his place in front of his little band of cavalry, He bade them follow him, and rode forward. But it seemed to be decreed that, on that day, the Lowland Scotch should in both armies appear to disadvantage. The horse hesitated. Dundee turned round, stood up in his stirrups, and, waving his hat, invited them to come up. As he lifted his arm, his cuirass rose, and exposed the lower part of his left side. A musket ball struck him ; his horse sprang forward, and plunged into a cloud of smoke and dust, which hid from both armies the fall of the victorious General.

IV.

Littérature.

1. Dites ce que vous savez de la vie et des ouvrages de Voltaire.

2. Citez quelques uns des principaux historiens français et indiquez la nature de leurs travaux.

GERMAN.

Morning Paper.

Translate into English :—

Buckingham hatte sich gewissermaßen zum Mittelpunkt der protestantischen Interessen gemacht: Meister der englischen Marine, war er entschlossen, sie zur Behauptung verselben einzusetzen. Noch hegte er in der Weise Jacob's I. die Hoffnung, daß die drohende Haltung, die er annahm, selbst ohne zu schlagen, die Franzosen zur Nachgiebigkeit stimmen, das alte Verständniß wieder herbeiführen könne ; aber Jedermann erwartete, daß er sich unverzüglich gegen Rochelle wenden werde, wozu alles vorbereitet war ; in seinen Entschlüssen schienen die Geschicke der Welt zu liegen.

Translate into German :

The close of the year has been rendered memorable by the successful termination of the China War, which had been rendered necessary by the breach of Lord Elgin's former Treaty in the autumn of 1859. The expedition was for the most part organized in India, and the Commander-in-chief and some of his principal officers had attained distinction by their services in the campaigns occasioned by the mutiny.

Grammatical Questions.

1. Give the nominative plural of Garten, Haus, Hof, Hund, Schlund, Stunde, Graf, Schaf, Kuh, Kalb.

2. Enumerate the German auxiliary verbs.

3. State the rule respecting the inseparable compound verbs.

4. Translate into German : once, the twenty-first, hundred-fold, six times six, more or less, twice as much.

Questions on German Literature.

1. State what you know about the life and writings of Jean Paul (Richter).

2. Write a short analysis of one of the following poems of Schiller : Der Taucher, der Ring des Polykrates, der Handschuh.

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Afternoon Paper.

Translate into English :—

Jn der Ebene zwischen dem Ticino und der Sesia, unweit
Vercelli, traf die römische Reiterei, die mit dem leichten Fuß=
volk vorgegangen war um eine Recognoscirung vorzunehmen,
auf die zu gleichem Zwecke ausgesendete phönikische, beide ge=
führt von den Feldherrn in Person. Scipio nahm das ange=
botene Gefecht trotz der Ueberlegenheit des Feindes an; allein
sein lechtes Fußvolk, das vor der Fronte der Reiterei aufgestellt
war, riß vor dem Stoß der feindlichen schweren Reiterei aus,
und während diese von vorn die römischen Reitermassen en=
gagirte, nahm die leichte numidische Cavallerie die römischen
Reiter in die Flanken und den Rücken.

Translate into German :—

Hannibal first waited on the King, and having put him in
mind of his great loyalty towards him, and his hatred to the
Roman people, he added, " When I was a boy of about nine
years of age, my father Hamilcar, being on the point of
departing from Carthage to serve as general in Spain, offered
up a. sacrifice to the great Jupiter: during which solemnity
he asked me whether I would bear him company to the
camp. I readily consented.

Those who are able may write an essay explaining the
advantages which they have derived from the study of
German.

Grammatical Questions.

1. Decline Solch ein tapferer Mensch.
2. Write the Present, Imperfect and Perfect, in the indica-
tive and subjunctive moods, of the verb brechen.
3. Give the meaning and gender of—

Licht, Gedicht, Fleiß, Feld, Geld, Schuh, Ast, Befehl, Zim=
mer, Ofen, Sattel, Uhr, Schlüssel, Bleistift, Donnerwetter.

4. Write some sentences in German in which the pre-
positions an, über, auf, are constructed both with the dative
and the accusative.

Questions on the History of German Literature.

1. Divide the history of German literature into periods,
and give a more detailed description of one of these periods.

2. Mention the principal poets who came after Schiller and Goethe, and describe some of their works.

3. Give the dates of Luther, Ulfilas, Otfried, Walther von der Vogelweide, Klopstock, Lessing, and state what you know of any one of them.

HINDUSTANI.

Morning Paper.

I.

Translate into English :—

قاضي ني كها كه يه بات مين ني كس طرح سي سچ

جانون تب نجّار كهني لگا كه خُداوند مين ني كتاب مين

لكها ديكها هي كه كسي وقت مين ايك گروه انسان · كا خُدا

كي غضب سي حيوان هو گيا تها ليكن عقل اُس گروه كي

جون كي تون رهي تهي اَور اُلفت و مُحبّت بهي ويسي هي

Translate into Hindustāni :

Go slowly. Stop. How far is your house from this ? I cannot hear you. That man can neither read nor write. He is deaf, and his sister is blind and lame. She was at the point of death. He was wounded in the head. When they heard this intelligence they were much grieved.

Grammar.

1. Write the passage dictated to you.

2. Decline the words دانه and كتاب

3. Explain and exemplify the use of the pronoun اپنا

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4. Write out the third person singular and plural of the verb حالنا in every tense.

5. How are passive verbs formed?

6. State the rules for and give examples of the use of في in construction with verbs.

7. Explain the following expression :

بجاس ایک

8. Date your paper both in words and figures.

Afternoon Paper.

Grammar.

1. Write from dictation as follows:

(*A passage will be read.*)

2. Give the rules for the concord of adjectives with sub-stantives, and translate the following :

A fairy-like boy.
He is the father of four daughters.
These four girls were going along.

3. Give the Hindustānī expressions for 2250, 175, and 8½, using in each case the fractional numbers.

4. Explain fully the construction of the verb with the agent case.

5. What parts of the verb must be used in composition with " saknā," " chāhnā," " chuknā," and "lagnā," respectively.

II.

Composition.

(Higher marks will be given if the translation is written in the Hindustānī character.)

B.

Early in the morning, Narrain Rao, having observed some unusual agitation among his troops, ordered one of the ministers to be on the alert; but the warning was neglected. The unfortunate prince had gone in the afternoon to repose

in a private chamber when a band of soldiers burst into the
palace.   Narrain, roused from slumber, ran into his uncle's
apartments and threw himself into his arms, entreating that
he would save him.   The latter at first appeared to interpose
on behalf of his nephew ; but Somer Sing, the ringleader,
said, "I have not gone thus far to ensure my own destruc-
tion ; let him go or you shall die with him."   Ragoba then
extricated himself from the grasp of the youth, whom, as well
as a faithful servant that had also clung round his neck, the
conspirators instantly despached with their swords.

III.

Translation.

دو زمیندار اپني گانو سي کہیں کو چلي جاتي تھي راہ
مین ایک پچاس ساتھ بیٹھي اچّھي زمین کا قطعہ دیکھ کر
اُن مین سي ایک نی کہا کہ بھاٰئي یہ جگہ اگر ھماري
تمہاري ہاتھ لگي تو کیا کرو بولا مین تو اپني حصّي کي زمین
مین پھلّواري لگاؤن کہو تُم اپني جگہ مین کیا کروگي کہا
مین اپني گاٰین بھینسین چراؤنگا اِس نی کہا بھلا مانو یا بُرا
مین تو اپني باغیچي کي پاس نہ چراٰي دونگا وہ بولا تمہارا
کچھ اِجارہ بہین ہَي مین اپني زمین مین جو چاھونگا سو
کرونگا غرض اِسي طرح ھُدّا تدّي کُرکي لگي ہاتھا پاٰي کرني

HISTORY OF INDIA.

Morning Paper.

1. What is the earliest reliable date in Hindu Chronology?

2. When and in what direction did the Mahomedans first penetrate into India?

3. State what you know of Mahmud of Ghazni and of his incursions into India.

4. Write a brief sketch of the origin and progress of the Sikhs.

5. Explain the title " United East India Company," and give some account of the transactions which led to its adoption.

6. When, and under what authority, did the Company first obtain territorial power in Bengal?

7. What were the Pindarees? How, and by whom were they suppressed?

8. What were the objects and immediate results of the Afghan war? Recount some of its principal incidents.

Afternoon Paper.

1. What is the character, as regards race and religion, of the present population of India, and what is known with regard to its earliest inhabitants?

2. Give some account of the intercourse of the Greeks with India, and of the extent to which they obtained a footing in that country.

3. Under what circumstances did the English first acquire any possessions in India? Name some of their early settlements, and explain how Bombay was added to them, and when.

4. Upon the death of Nizam-ul-Mulk, what circumstances brought the English and French into collision? What part did Dupleix play in this struggle, and with what advantage to himself?

5. Give some account of Sivajee—his race—his exploits, and their date.

6. What was the origin of the last Burmese war, and how did its result affect the extent of the British possessions in that part of India?

PURE MATHEMATICS.

Morning Paper.

1. A gentleman in Australia receives 12 per cent. per annum on his capital in the colony; he brings his capital home, invests it in the 3 per cents. at 94¾, and his income in England is £2400 a-year, what was his income in Australia?

2. Find without the use of the tables the number of which ·3 is the logarithm to a base 10.

Find by the aid of the tables —

$$\frac{(7\cdot25)^{\frac{1}{4}} \times 1\cdot0046}{(\cdot0874)^2}$$

3.

(1) Prove

$$\frac{1}{x(x-a)(x-b)} = \frac{1}{ab}\frac{1}{x} + \frac{1}{a\,(a-b)\,(x-a)} + \frac{1}{b\,(b-a)\,(x-b)}$$

(2) Prove

$$\sqrt{7 + 4\sqrt{3}} + \sqrt{7 - 4\sqrt{3}} = 4$$

4. If (n) be the number of balls in the base row of a complete square pile, prove that the whole number of balls in the pile may be determined from the formula.

$$\frac{n.\,(n + 1)\,(2n + 1)}{6}$$

and account for the formula always giving a whole number.

Find the number of balls in an incomplete pile of 20 courses, with 44 balls in each side of the base.

5. Prove that the opposite angles of any quadrilateral figure inscribed in a circle, are together equal to two right angles.

If AB, CD be the opposite sides of a quadrilateral circumscribing a circle whose centre is E, prove that the angles AEB and CED are together equal to two right angles.

6. Prove the sine of an angle or arc equal to the cosine of its complement. Find the angle or arc, of which the sine is to the cosine as $\sqrt{3}$ to 1.

In a right angled triangle, C the right angle, prove

$$\text{Sec } 2 \, A = \frac{c^2}{b^2 - a^2}$$

7. The base of a pyramid is a regular hexagon, each side of which is 40 feet, what must be its height that its cubical content may be the same as that of a sphere, whose radius is 21·5 feet.

8. How long will it take to fill a hemispherical tank of 6 feet radius from a cistern, which supplies by a pipe 6 gallons of water per minute, a gallon of water containing 277·27 cubic inches.

9. Investigate Maclaurin's theorem, and by means of it expand

$$e^{\tan^{-1} x}$$

as far as the term involving x^3.

Afternoon Paper.

1. Find the value of ·334375 of 20 shillings, of ·3275 of a day, and of ·4765625 of a mile.

2. Add together $\frac{5}{18}$ of a guinea, $\frac{3}{32}$ of a pound, $\frac{7}{20}$ of a crown, and $\frac{5}{16}$ of a shilling; and reduce the result to the decimal of a pound.

3. Solve the following equation :

$$\left(\frac{x-a}{x+b}\right)^3 = \frac{x-2\,a-b}{x+a+2\,b}.$$

4. Prove the binomial theorem when the exponent is a positive integer. Find the co-efficient of x^4 in the expansion of $(1+x+x^2+x^3)^3$ in powers of x.

5. Shew that whatever be the value of x, the expression $a\,x^2 + b\,x + c$ has always the same sign as a, unless the roots of the equation $a\,x^2 + b\,x + c = o$ are possible and unequal, and x lies between them.

6. Find by logarithms

    (1) $\sqrt[3]{·00006706}$

    (2) $\left(\frac{·01607}{·00881}\right)^{\frac{1}{4}}$

7. The opposite sides and angles of parallelograms are equal to one another, and the diameter bisects them.

If the four sides of a quadrilateral figure are all equal, shew that the diagonals bisect each other at right angles.

8. Investigate the expression for the cosine of an angle of a triangle in terms of the sides. The sides of a triangle are 2, $\sqrt{6}$, and $1 + \sqrt{3}$; determine the triangles.

9. A line A B in length 400 yards is measured close by the side of a river, and a point C close to the bank on the other side is observed from A and B; the angle C A B is found to be 50° and the angle C B A to be 65°; find the perpendicular breadth of the river.

10. Trace the curve $a^2y^4 = x^4 (a^2 - x^2)$; and find the area of one loop of it.

11. Calculate the sides of a spherical triangle in which the angles are respectively 90°, 60°, and 36°.

MIXED MATHEMATICS.

Morning Paper.

1. If the parallel forces 7 and 5 act at the opposite ends of a rod 12 inches long, making an angle of 30° with the direction of the rod, where and how must the single force act for equilibrium ? Find also the pressure on the rod in a direction perpendicular to it when the forces 7 and 5 act as above.

2. Find the centre of gravity of a triangular area.

One corner of a triangle is cut off by a line parallel to the base, the portion cut off is one-fourth of the whole area of the triangle, find the centre of gravity of the trapezoid that remains.

3. Describe the compound wheel and axle called the "differential axle," and investigate the relation between the power and the weight in case of equilibrium.

4. The algebraical sum of the moments of two forces about any point, is equal to the moment of their resultant.

5. Define a "couple." Enunciate and prove the proposition known as the "parallelogram of couples."

6. State the Third Law of Motion, and show how it is applicable to the direct collision of elastic balls, in determining their motions after impact. A ball $(3m)$ strikes a ball (m) at rest, the modulus of elasticity being $(\frac{3}{4})$, compare the velocities of the striking ball before and after impact.

7. Find the range of a projectile in vacuo, estimated along a given inclined plane passing through the point of projection.

Find the direction in which a body must be projected from a given point with a given velocity to hit a given mark, and show *generally* that there are two directions that will satisfy the conditions.

8. Prove that the centres of oscillation and suspension are reciprocal.

Determine the distance between the centres of oscillation and suspension of a body that makes an oscillation in $2\frac{1}{2}$ seconds.

9. Given the volumes and specific gravities of two substances that mix freely, find the specific gravity of the compound.

The specific gravity of gold is 19·25, of copper 8·9. How many cubic inches of copper must be fused with 12 cubic inches of gold, so that the specific gravity of the compound shall be 18·45 ?

10. When a body floats in a liquid, prove that the weight of the body is equal to the weight of the liquid displaced.

A hemisphere whose weight is 5600 grains floats with its vertex downwards and with $\frac{1}{3}$ of its vertical radius immersed, what weight must be placed on the hemisphere so that $\frac{1}{2}$ of the vertical radius may be immersed.

Afternoon Paper.

1. Enunciate the proposition called the *parallelogram of forces*, and assuming it proved so far as regards the *direction* of the resultant, prove that it gives the *magnitude* of the resultant.

Two forces P and Q have a resultant R which makes an angle a with P; if P be increased by R while Q remains unchanged shew that the new resultant makes an angle $\frac{a}{2}$ with P.

2. If forces act in one plane on a rigid body determine the conditions of equilibrium.

3. Find the ratio of the power to the weight in the case of the inclined plane with friction. A plane is inclined to the horizon at an angle of 30°; find the magnitude and direction of the least force which will prevent a body weighing 100 lbs. from sliding down the plane, the co-efficient of friction being $\frac{1}{4}$.

4. Enunciate the principle of virtual velocities, and prove it in the case of a bent lever acted on by two forces.

5. Determine the velocity with which a particle must be projected so as to strike the top of an object which is 50 feet high and 1000 yards distant, the angle of projection being 45°.

6. At what rate would a locomotive engine working at 60 horse power draw a train up an inclined plane having a rise of 1 foot in 100, supposing the train and engine to weigh 60 tons, and the friction to be 6 lbs. a ton.

7. A shot is fired with a given velocity towards a tower whose height is given and whose horizontal distance from the gun is one-half of the greatest range that can be reached with the given velocity. Find between what limits the angle of projection must lie in order that the shot may hit the tower, neglecting the resistance of the air.

8. Shew how to determine the specific gravity of a substance which is denser than water.

The specific gravity of quartz is 2·62 and of gold is 19·35 : a nugget of quartz and gold weighs 11·5 ounces and its specific gravity is 7·43 ; find the weight of gold in the nugget.

10. A triangle ABC is immersed in fluid in such a position that the point A is in the surface and the lines AB,AC are equally inclined to it; BC being produced to meet the surface in E, shew that the pressures on the triangles ABC, ACE are in the ratio of $AB^2 - AC^2$ to AC^2.

ENGLISH LANGUAGE, LITERATURE, AND COMPOSITION.

Morning Paper.

1. What influence was exercised by the Norman Conquest, first on the language, and secondly on the literature of the conquered race?

2. Distinguish between *Composition* and *Derivation* of words. Are *bishopric, kingly, friendship,* compounds or derivatives?

3. Distinguish between the use of the *full stop, colon, semicolon,* and *comma.* Give examples.

4. Why have *wheat, pitch, gold, deer, sheep* no plural, and *bellows, scissors, mathematics* no singular form? Instance other substantives which have only one number.

5. Instance words which are not pronounced as they are written; and account for the inconsistency.

6. Point out and correct the errors or inaccuracies in the following : *Every Constable amounting to 240 had his cresset. The town consists of three distinct quarters, of which the western one is by far the larger. Every sort of legislature resolve themselves into this.*

7. Write a short life of Dr. Johnson.

8. To what works do the following passages respectively belong?

" What's Hecuba to him, or he to Hecuba?"

" Where ignorance is bliss
'Tis folly to be wise."

" A man he was to all the country dear,
And passing rich with forty pounds a year."

" And you, brave Cobham, to the latest breath,
Shall feel your ruling passion strong in death :
Such in those moments, as in all the past,
Oh, save my country, Heaven! shall be your last."

" Better fifty years of Europe than a cycle of Cathay."

9. For an essay :—

The advantages of an acquaintance with mathematical and physical science.

10. Write a letter describing the Volunteer Movement.

Afternoon Paper.

1. Write an essay on " Winter," mentioning its duties and amusements.

2. Describe in a letter any city with which you may be acquainted.

3. Enumerate the most admired poems on rural subjects in our literature, naming the authors, and describing the general character of those works.

4. What do you understand by a "Figure of Speech" in English? Write a series of short sentences, each containing an example of a Figure of Speech.

5. Give as complete a list as you can of foreign words which have been naturalized in English during the last two centuries.

6. Compose a short passage, to illustrate the use of *ellipse, pleonasm,* and *antithesis.*

7. Explain the expressions in italics : "*What is it o*'clock?" "*It wants* fifteen minutes *to* one *by* railway time, *not but that* this is no reason why you should hurry away."

8. Give a short sketch of the rise and development of Dramatic Literature in England.

9. Give a list of English Historians, characterizing each of them by a single epithet.

10. Compare the influence of the Ballad Writer in early times with that exercised by the Press at the present day.

HISTORY AND GEOGRAPHY OF THE BRITISH EMPIRE.

Morning Papers.

1. What was the Feudal System? Was there any difference between its form in England and on the Continent of Europe?

2. What was, or could have been said for and against the right of Stephen, John, Henry VI., Elizabeth, and Anne to the English Throne?

3. Describe the foreign policy of Henry VIII., Elizabeth, Charles II., and William III.

4. For what objects, and with what results, have Somersetshire, Cornwall, Kent, Norfolk, and the Northern Counties, at different times rebelled?

5. Enumerate the wars and alliances entered into by Great Britain with European powers, between the years 1789 and 1815.

6. Explain the following terms: *Interdict*, *Pale* in Ireland, *Welsh Marches*, Sovereign *de facto* and *de jure*, *Tenth and Fifteenth*, *Villein*.

7. In what reigns, and from what causes, has English commerce chiefly flourished?

8. Of what use to Great Britain are its several colonies and dependencies? Refer to any facts which may support your answer.

9. Mark, on the Map, the position of each of the following towns and districts by an asterisk (*), writing by the side the name of the place, and also that of the branch of trade for which it is distinguished: Hull, Huddersfield, Wolverhampton, Dolgelly, Merthyr Tydvil, Rochdale, Isle of Portland, the Potteries.

Afternoon Paper.

1. What traces of their occupation of Britain have the Romans left on the face of the country?

2. When did the Danes begin their descents on the British Isles? At what time, and for how long, did Danish kings rule in England?

3. Give a sketch of the sessions, proceedings, and enactments of the Long Parliament.

4. Write a short life of King William III.

5. For what events was the reign of George II. chiefly remarkable?

6. Mark on the map the boundaries of the Scotch Counties, mentioning the name of each, and that of the capital town.

7. Mention the most celebrated statesmen who flourished in the reign of George III., and sketch the character and life of *one* of them.

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LATIN.

Morning Paper.

CICERO.

Hæc igitur prima lex amicitiæ sanciatur, ut ab amicis honesta petamus ; amicorum caussâ honesta faciamus : ne exspectemus quidem, dum rogemur ; studium semper adsit, cunctatio absit ; consilium vero dare gaudeamus libere. Plurimum in amicitiâ amicorum bene suadentium valeat auctoritas, eaque et adhibeatur ad monendum non modo aperte, sed etiam acriter, si res postulabit ; et adhibitæ pareatur.

VIRGIL.

Hæc ubi dicta dedit, cœlo se protenus alto
Misit, agens hiemem nimbo succincta per auras,
Iliacamque aciem et Laurentia castra petivit.
Tum dea nube cava tenuem sine viribus umbram
In faciem Æneæ (visu mirabile monstrum)
Dardaniis ornat telis, clipeumque jubasque
Divini assimulat capitis, dat inania verba,
Dat sine mente sonum, gressusque effingit euntis :
Morte obita quales fama est volitare figuras,
Aut quæ sopitos deludunt somnia sensus.
At primas læta ante acies exsultat imago,
Irritatque virum telis et voce lacessit.

Translate into Latin Prose:—

In the origin of language the poet and the prose writer are distinct in their qualifications ; the poet ever proceeds first, treading unbeaten paths, enriching his native funds, and employed in new adventures. The other follows, and though slow in his motions, treasures up every pleasing and useful discovery. But when once the full force of a language is known, the poet seems to rest from his labours, and is overtaken by his assiduous pursuer.

Questions in Latin Literature.

1. What references to the circumstances of his own life do you find in any of the eclogues of Virgil ?

2.   Quis aut Euristhea durum
Aut illaudati nescit Busiridos aras?
Cui non dictus Hylas puer, et Latonia Delos
Hippodameque, humeroque Pelops insignis eburno?
  Whose lines are these? What change in the literary
taste of Rome do they imply, and how far was Virgil in-
fluenced by it?
  3. Explain the lines—
Ascræumque cano Romana per oppida carmen.
Et qualem *infelix* amisit Mantua campum.
Illo Virgilium me tempore dulcis alebat *Parthenope*.
Hinc Drepani me portus et *illætabilis* ora Accipit.
  4. What is the meaning and derivation of the word "sa-
tire"? Who was the first Roman satirist, and whom did
he imitate?
  5. What was the opinion of Horace on the style of Livius,
Plautus, and Lucilius? In what terms also does Juvenal
speak of the latter?
  6. Name and describe the metres used by Horace.
  7. What do you know of the writings of Fabius Pictor,
Valerius Antias, and Licinius Macer?

Afternoon Paper.

Translate into English:—

Virgil.

Fortunatus et ille, deos qui novit agrestes,
Panaque, Silvanumque senem, Nymphasque sorores!
Illum non populi fasces, non purpura regum
Flexit, et infidos agitans discordia fratres;
Aut conjurato descendens Dacus ab Istro;
Non res Romanæ, perituraque regna; neque ille
Aut doluit miserans inopem, aut invidit habenti.
Quos rami fructus, quos ipsa volentia rura
Sponte tulere sua, carpsit; nec ferrea jura,
Insanumque forum, aut populi tabularia vidit.

Livy.

  Satis quidem et tunc in præsentia castigata illa legatio
erat, cum tam tristi responso vestro dimissa. Si tum parum

ignominiæ pensum est, hæc certe tam miserabilis ac supplex legatio etiam insolentioris, quam illa fuit, legationis satis magnum piaculum esset. Superbiam, verborum præsertim, iracundi oderunt, prudéntes irrident; utique si inferioris adversus superiorem est; capitali pœna nemo unquam dignam judicavit.

Translate into Latin Verse :—

> Few the words that I have spoken ;
> True love's words are ever few ;
> Yet by many a speechless token
> Hath my heart discoursed to you.

> Souls that to each other listen
> Hear the language of a sigh ;
> Read the silent tears that glisten
> In the tender trembling eye.

Grammatical Questions.

1. Give the gender and the genitive case singular of—
As, far, jocus, lis, palus, poëma, pecus, specus, tigris, vannus, ver, and verna.

2. Parse the following :—
Abies, abires, abigam, bigam, fudi, fundi, funditus, morentur, morerentur, perrexere, superstitem, tonitru, utrem, and vapula.

3. Give the futures, perfects, and past participles (if any) of these verbs :—
Ango, comedo, consenesco, fallo, frango, lædo, ordior, possideo, sterno, and vincio.

4. From what roots do you derive the words—
Amens, anceps, cunctus, fomentum, malo, mollis, nudiustertius, provincia, secundus, and tripudium ?

5. Give the exact force of the following terminations :—
(1.) Of substantives : -etum, -icen, -unculus.
(2.) Of adjectives : -bilis, -ficus, -iger, -osus.
(3.) Of verbs : -esco, -ito, -urio.

6. Transfer the following sentence into the *oratio obliqua:*—
Paulius dixit :—" Sacrificio rite perfecto, ego et Cn. Octavius, simul ac senatus censuit, exibimus. C. Licinio, collegæ meo, erit curæ, me absente, ut si qua parari mittive ad id bellum opus est, parentur mittanturque."

10. In what portions of its grammar is the Latin a copious tongue, and in what portions a scanty and defective one?

GREEK.

Morning Paper.

Translate into English :—

Homer.

Ἠΰτε πῦρ ἀΐδηλον ἐπιφλέγει ἄσπετον ὕλην
οὔρεος ἐν κορυφῇς, ἕκαθεν δέ τε φαίνεται αὐγή,
ὣς τῶν ἐρχομένων ἀπὸ χαλκοῦ θεσπεσίοιο
αἴγλη παμφανόωσα δι' αἰθέρος οὐρανὸν ἷκεν.

Demosthenes.

Τὰ μὲν οὖν κατηγορημένα πολλὰ καὶ δεινά, καὶ περὶ ὧν ἐνίων μεγάλας καὶ τὰς ἐσχάτας οἱ νόμοι τάττουσι τιμωρίας· τοῦ δὲ παρόντος ἀγῶνος ἡ προαίρεσις αὕτη ἐχθροῦ μὲν ἐπήρειαν ἔχει καὶ ὕβριν καὶ λοιδορίαν καὶ προπηλακισμὸν ὁμοῦ καὶ πάντα τὰ τοιαῦτα· τῶν μέντοι κατηγοριῶν καὶ τῶν αἰτιῶν τῶν εἰρημένων, εἴπερ ἦσαν ἀληθεῖς, οὐκ ἔ ν ι τῇ πόλει δίκην ἀξίαν λαβεῖν, οὐδ' ἐγγὺς.

Translate into Greek Verse :—

Like one that stands upon a promontory,
And spies a far-off shore where he would tread,
Wishing his foot were equal with his eye ;
And chides the sea which sunders him from thence,
Saying, he'll lade it dry to have his way ;
So do I wish the crown, being so far off ;
And so I chide the means which keep me from it ;
And so I say, I'll cut the causes off,
Flattering me with impossibilities.   SHAKSPEARE.

Questions.

1. What are the chief peculiarities of the Greek of Homer?

2. Give some account of the works of *Archimedes, Sappho, Pindar, Theocritus*.

3. What indications are there in Greek poetry of appreciation of natural scenery ?

4. What changes were introduced into Greek Tragedy by Phrynichus and Sophocles ?

5. Are there any indications in Thucydides of prejudice in favour of certain principles, or partiality to individuals or parties ?

6. From what authors and from what parts of their works are the following lines quoted ?—

οἵηπερ φύλλων γενεὴ τοιήδε καὶ ἀνδρῶν.

νήπιοι, οὐδ' ἴσασιν ὅσῳ πλέον ἥμισυ παντός.

ὦ τρισμακάρι' Εὐριπίδη,
ὅθ' ὁ δοῦλος οὑτωσὶ σοφῶς ὑποκρίνεται.

ἔσται δ' ἱππολόφων τε λόγων κορυθαίολα νείκη,
σχινδαλάμων τε παραξόνια, σμιλεύματά τ' ἔργων.

State any thing that you know about these passages.

Herodotus.

Οἱ δὲ Δελφοὶ πυνθανόμενοι ταῦτα ἐς πᾶσαν ἀρρωδίην ἀπίκατο· ἐν δείματι δὲ μεγάλῳ κατεστεῶτες ἐμαντεύοντο περὶ τῶν ἱρῶν χρημάτων, εἴτε σφέα κατὰ γῆς κατορύξωσι εἴτε ἐκκομίσωσι ἐς ἄλλην χώρην. ὁ δὲ θεός σφεας οὐκ ἔα κινέειν, φὰς αὐτὸς ἱκανὸς εἶναι τῶν ἑωυτοῦ προκατῆσθαι. Δελφοὶ δὲ ταῦτα ἀκούσαντες σφέων αὐτῶν πέρι ἐφρόντιζον.

Sophocles.

οὐ δῆτ', ἐπεί τοι τὴν μὲν αὐτίχ' ἡμέραν,
ὁπηνίκ' ἕξει θυμός, ἥδιστον δέ μοι
τὸ κατθανεῖν ἦν καὶ τὸ λευσθῆναι πέτροις,
οὐδεὶς ἔρωτος τοῦδ' ἐφαίνετ' ὠφελῶν·
χρόνῳ δ', ὅτ' ἤδη πᾶς ὁ μόχθος ἦν πέπων,
κἀμάνθανον τὸν θυμὸν ἐκδραμόντα μοι
μείζω κολαστὴν τῶν πρὶν ἡμαρτημένων,
τοτηνίκ' ἤδη τοῦτο μέν, πόλις βίᾳ
ἤλαυνέ μ' ἐκ γῆς χρόνιον· οἱ δ' ἐπωφελεῖν,
οἱ τοῦ πατρός, τῷ πατρὶ δυνάμενοι, τὸ δρᾶν
οὐκ' ἠθέλησαν ἀλλ' ἔπους σμικροῦ χάριν
φυγάς σφιν ἔξω πτωχὸς ἠλώμην ἐγώ.

Translate into Greek Prose:— ·

I shall not, I trust, be accused of superstition but I

must remark that even in this world, the natural order of events will sometimes afford the strong appearances of moral retribution. The first Palæologus had saved his empire by involving the Kingdoms of the West in rebellion and blood; and from these seeds of discord uprose a generation of iron men who assaulted and endangered the empire of his son.

Grammatical Questions.

1. What is the gender and what the genitive case singular of ἀήρ, ᾄδης, ἀλώπηξ, βλάβος, γάλα, γέρας, δημός, λέβης, λεώς, μόρμων, μῦς, and π τ έ ρ ν ξ ?

2. Supply the ellipse in the sentence—

μὴ γὰρ τῆς πόλεώς γε, ἰμηδ᾽ ἐμοῦ.

3. Parse *completely* the following words (in the passages given for translation) :—

διετέτακτο, ἀπείθησαν, ἵεντο, ἴδμεν, ἀνέσχοντο, ἔνι,
τυχεῖν, ἑώρα, διεήξει, ἐγράψατο.

4. Distinguish between the senses of

εἰμί, εἶμι—εἰσί, εἶσι—σφώ, σφῴ—νῴ, νῶ—
κατά, κᾶτα—and ἐξ, ἔξ.

5. What do you understand by the cognate accusative? Give instances.

6. Decline the nouns τέρας, αὔχην, γυνὴ, κάρα, ἱκέτης, ὀδούς.

7. What is the force of the terminations

-δαπός, -ήεις, -ικός, -ιμος, -ώδης, -τός, -τέος, -ίδιον,
-εῖον, and -φάσιος ?

8. What is there remarkable in the following constructions ? Account for them.

α. Οὐκ οἶδ᾽ ἂν εἰ πείσαιμι.

β. Μὴ σκῶπτέ με, οὐ γὰρ ἀλλ᾽ ἔχω κακῶς.

γ. Ἀκούω φθόγγον, ὀρνίθων, κακῶ κλάζοντας οἴστρῳ.

9. What are the most common ellipses of substantives in Greek ? Give examples.

10. What are the metres of the following lines ?

α. τέρμα τοῦ βίου περάσῃ, μηδὲν ἀλγεινὸν παθών.

β. τὸ πνεῦμ᾽ ἔλαττον γίγγεται.

γ. γνοὺς ἀπολάψεις, ὅ τι πλεῖστον δύνασαι.

GREEK HISTORY.

1. Trace the various migrations of the Greeks from the destruction of Troy to the Olympic victory of Corœbus. Date those two events.

2. State the circumstances that led to the expulsion of the Peisistratidæ from Athens.

3. Show that the most important battles in Greek history took place in Bœotia. How would you account for the circumstance?

4. Write a short *character* of Brasidas or Theramenes.

5. The connexion between Greece and Egypt. Trace its progress from the earliest times to the founding of Alexandria.

6. When and what part did Argos take in the Peloponnesian war, and why did she stand aloof at first?

7. Sketch the history of Cyrene. What writers did it produce?

8. How long did the period of Theban supremacy last, and what was the cause of its fall?

9. Compare the Council (βουλή) at Athens with the Senate (γερουσία) at Sparta.

10. "Quicquid Græcia mendax audet in historiâ." How far do the Greek historians merit this sarcasm?

HISTORY OF ANCIENT ROME.

1. What was the occasion on which the fable of Menenius was spoken?

2. Give an exact account of the institutions of Servius Tullius.

3. Describe briefly the different functions of *Consul, Prætor, Ædile, Quæstor,* and *Censor.*

4. Describe briefly the battles of Sentinum, Actium, the Aufidus.

5. What were the dates and what the effects of the *Lex Terentilia, Lex Ogulnia, Lex Genucia, Lex Æmilia, Lex Roscia?*

6. Give an account of the sedition of the Gracchi.

7. Draw a map of the country contained between the

Rhone on the West and the Adriatic on the East, going as far south as Rome, mentioning the modern names as well as the ancient.

8. Enumerate the principal events in Roman history from A.U.C. 390 to A.U.C. 490.

9. Who are the first known writers of Roman history? When did they live? From what sources could they compile the history of times anterior to their own?

10. The circumstances under which the battle of *Cannæ* was fought.

EXPERIMENTAL SCIENCES.

1. Give some illustrations of the effects of heat, light, and electricity, in promoting the operation of chemical affinity.

2. When the *latent* heat of alcohol-vapour is stated to be 474·6, what is understood by that expression? Give an illustration of the difference in the meaning of the terms latent heat and specific heat, and suggest some method of measuring the latent heat of a vapour.

3. Two pith-balls, suspended by silk threads, are to be charged with opposite kinds of electricity, and are then to be successively approached to a third ball, which has not been electrified. Describe the results produced in succession, and give some method of determining the electrical condition of each pith-ball.

4. Show how the principle, which is applied in the Leyden jar, also receives application for rendering evident minute traces of electricity. Mention any important application of the same principle to experimental purposes, with which you are acquainted.

5. In 1849, the declination or variation of the needle at Brussels was observed to be 20° 34′ 18″ W., and its inclination was 67° 56′ 8″. Explain what is understood by these statements, and mention what you know regarding the variation of the earth's magnetism.

6. How would you proceed to magnetise, permanently, a steel bar by means of a voltaic current; and by what circumstances would the nature of *polarity* of the bar be determined?

7. Give an example of the establishment of a voltaic cur-

rent by means of two liquids and one metal. What will be the direction of the current, and how could you demonstrate the correctness of your statement?

8. You are required to name some electro-positive and electro-negative elementary bodies, and to illustrate, by one or two examples, the effects produced on passing a voltaic current through liquids which contain in solution some of those elements, in a state of combination.

9. What are the elementary bodies contained in gunpowder? In what condition does each exist in that material; and what do you know regarding the changes which they undergo upon its explosion?

10. A quantity of copper-filings is divided into three parts. One part is mixed with flowers of sulphur; a second with some tin-filings, and the third with powdered glass. Describe the result of the action of heat upon each mixture.

11. Under what names and in what localities does light carburetted hydrogen occur in nature; what are its composition and important properties, and how do you explain its natural formation?

12. Describe the construction and mode of using an astatic galvanometer, and explain the principles upon which its action depends.

Afternoon Paper.

1. A man lay down, for the sake of warmth, beside a lime-kiln, and was taken up dead from suffocation. Describe the physical and chemical qualities of the substance which killed him.

2. During the prevalence of cholera some years ago, a physician was accustomed to wear in places where the disorder was prevalent a handkerchief, containing a compound of chlorine, before his mouth. Give a scientific reason for this practice.

3. Describe sulphurous acid: what is the difference between it and sulphuric acid? Whence does the odour arise produced by the combustion of sulphur in the air?

4. I require some sulphide of iron, how am I to obtain it? Having procured the substance I pour upon it some dilute sulphuric acid; shew by a chemical formula the re-action, and describe the properties of the substance liberated.

5. A bar of perfectly soft iron is placed in the direction of the dipping needle ; what is the precise magnetic condition of the bar ? What occurs when the ends of the bar are reversed?

6. Explain the act of magnetization according to the theory of magnetic fluids. State also the difference between soft iron and hard steel as regards their capacities for magnetization.

7. I pound some sulphur in a mortar and throw the powder on the plate of an electroscope, the leaves diverge ; I touch the plate, the leaves collapse ; the sulphur is now shaken off without my touching the plate, the leaves again diverge. Explain each of these effects.

8. Give two clear examples of the chemical action of an electric current ; and two others of the magnetic action of the same current.

9. State the principle of the needle telegraph, and describe particularly the circumstances on which the direction in which the needle moves depends.

10. Why can you stand with ease a temperature of 200 degrees in a Turkish air-bath, when water of that temperature would scald you, and metal of that temperature would burn you?

11. Describe some one form of the minimum thermometer.

NATURAL SCIENCES.

1. In what respects does the increase in bulk of a mineral substance differ from the growth of an animal or a plant?

2. What is a *crystal*, and whence is the word derived?

3. Represent, by diagram, the *axes of form* in the principal systems of crystallization.

4. Describe, with a sketch, the general aspect of crystals of snow, and state to what systems they belong.

5. Give the reasons why ice and water may be included among mineral substances.

6. State the difference in appearance and composition between ordinary and magnesian limestone.

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7. Mention the minerals which contain the largest percentage of the metal aluminium.

8. Give the mineral characters of the principal oxides occurring in nature.

9. Which among the metals are frequently found in the native state ?

10. Explain the meaning of the terms *stratum*, *system* and *formation*, as employed in Geological language.

11. What are the general conclusions which have been established by observation as to the succession of stratified deposits ?

12. Give some account of the geological reasons for believing in a former union of England with the Continent.

13. To what classes of rock are the terms *plutonic* and *volcanic* respectively applied ?

14. Describe the nature of the rocks called Porphyry and Serpentine.

15. Mention concisely some of the practical applications of Geology in the Military and Engineering professions.

16. Of what kind is the general physical structure of a *coal-field?*

17. Describe the character of the irregularities to which stratified rocks are subject.

18. What Geological formation contains the earliest remains of Homocercal fishes ?

Afternoon Paper.

1. What is a mineral? and explain what is meant by a mineral species.

2. In what way are minerals chiefly distinguished ?

3. What is a crystal, and why is a knowledge of crystalline forms an important means in distinguishing minerals ?

4. Write the names of the following minerals in the order of their relative hardness:—Apatite, Calcite, Corundum, Copper-pyrites, Diamond, Pyrites, Selenite.

5. Describe the method of taking the specific gravity of a mineral.

6. What is the relative fusibility of Augite, Felspar, Idocrase, Labradorite, Mica, and Quartz ?

7. In what characters does Aragonite differ from Calcite ?

8. Which of the elements of a granitic rock are first attacked by the weather, and in what manner ?

9. Under what circumstances are the metamorphic rocks supposed to have acquired their crystalline structure and cleavage ?

10. What is a lava ? and explain the difference between Pitchstone, Pearlstone, Obsidian, and Pumice.

11. From what sources are the materials of the sedimentary strata supposed to have been derived ?

12. Explain what is meant by the *dip* of a stratum, and the way in which it is measured.

13. Explain what is understood by the " London Basin," and illustrate by means of a diagram.

14. In what regions are deposits similar to the Chalk now in process of formation ?

15. Mention some of the characteristic fossils of the strata below the Coal.

16. Name the most remarkable extinct reptiles of the Secondary age.

17. Give the stratigraphical range of the genera *Ammonites, Bellerophon, Hippurites, Gryphœa, Spirifera,* and *Orthis.*

18. State fully the practical uses of a knowledge of geology to military men.

SURVEYING INSTRUMENTS.

In Writing.

1. Draw a straight scale of 2 degrees to an inch, and upon it show the principle of constructing a vernier to reach to 10 seconds on an arc graduated at 10-minute intervals.

2. For what reasons may not bearings with the magnetic meridian be trusted for important angles of a survey ?

3. What causes the index error in a sextant, what is its effect, and how would you ascertain its amount ?

4. Explain why the sextant is objected to for observing angles in a survey, especially in a hilly district.

5. Describe the operation of setting the vertical axis of the theodolite in such a position that the azimuthal plate shall move horizontally.

E 2

6. Explain the mode of using a theodolite in making a traverse of a road.

Vivâ Voce.

1. Examine and ascertain the index error of a box sextant.
2. What is the parallax error of a sextant?
3. In traversing with a prismatic compass, why is it unnecessary to take bearings at more than every other station?
4. If in view of four or five fixed points on a survey how could you determine and lay down on plan your own position?

ASTRONOMICAL INSTRUMENTS.

In Writing.

1. Describe the method of observing the altitude of the sun with a sextant when the natural horizon cannot be used.
2. For what purposes is the transit instrument employed? Describe the method of using it in taking an observation of the sun.
3. What is the collimation error of a transit instrument, and how may it be ascertained by observation of a close circumpolar star?
4. Describe how you would ascertain the amount of deviation of the path described by the line of collimation of a transit instrument, from the true meridian of the place where it is set up.
5. Describe the method of adjusting and using the reading microscopes attached to the altitude and azimuth instrument.

Vivâ Voce.

1. How do you ascertain the value of one revolution of the azimuthal screw of a transit instrument?
2. How would you adjust the line of collimation in azimuth of a transit instrument?
3. How do you ascertain and correct the collimation in altitude of an altitude and azimuth instrument?

SANDHURST.

THE Royal Military College at Sandhurst contains from 150 to 200 Gentlemen Cadets, preparing for their commissions in the Cavalry or Infantry. It is a large and commodious building, situated in a well wooded park, with ornamental lakes, &c., close to the village of Blackwater (a station on the South Eastern Railway) and within a short distance of the Camp at Aldershot.

The average period of study of each cadet is from one year and six months to two years. Hence it follows that should the cadet be the son of a private gentleman, his commission would cost him about £250, if he succeeded in getting it without purchase. Of course it would be less, should his father be connected with any of the Military Departments.

In order to obtain permission to compete at the Entrance Examination, the Candidate's name must be forwarded to His Royal Highness the Commander in Chief, that it may be placed upon his list. This will easily be effected if the application be accompanied by a letter of recommendation from any magistrate, clergyman, or country gentleman.

All those who at the final Examination may have obtained the requisite amount of marks (1800), will be recommended to the Commander-in-Chief for commissions. About fifteen are given every term without purchase, to those, of course, who stand at the top of the qualified list; it follows therefore that when there are more than that number, they must either purchase their commissions, or else wait for another term. They can then again compete, unless they have exceeded the limit of two years, beyond which no cadet is allowed to remain at the College.

Great changes are now under consideration with regard to the arrangements of the College.

It is expected that the number of cadets will be increased to 500, the greater portion of whom will remain only one year, and devote themselves principally to Fortification and Military History, they will then have to pass a final Examination to obtain their commissions by purchase.

The following is a list of the books now in use at the College :—

Mathematics.	Colenso's Arithmetic, Algebra, and Trigonometry
„	Farley's Tables of Logarithms.
„	Narrieu's Euclid.
Fortification.	Woolwich Papers.
„	Macaulay's Treatise.
French.	De Charante's Course and Exercises.
„	Contanseau's Dictionary.
„	Gil Blas.
German.	Tieck's Grammar and Exercises.
„	Flügel's Dictionary.
„	Yungfrau von Orleans.
„	Seven Years' War.
Geology.	Page's advanced Text Book.
„	Dana's Mineralogy.

Regulations of the Royal Military College.

I. *Admission.*

1. All Gentlemen Cadets will be admitted by Public Examination.

2. Of these, twenty will be Queen's Cadets, selected from among the sons of Officers of the Army, Royal Navy, and Royal Marines, who have fallen in action, or have died of wounds received in action, or of diseases contracted on active service ; and who have left their families in reduced circumstances. Fifteen, will be sons of Officers in the Army, and 5 sons of Officers in the Royal Navy and Royal Marines. They will all be admitted by a qualifying examination.

3. The age of admission will be, from 16 to 19 years.

4. Every candidate for admission by public examination must apply, through his parent or guardian, to the Commander-in-Chief, to have his name entered on the list of candidates.

5. He must transmit, with his application, the following documents, viz. :—(*a.*) An extract from the Register of his baptism,* or, in default of that, a declaration before a magis-

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* When the Register of Baptism does not contain the date of birth it should be accompanied by a memorandum, signed by one of his parents or guardians, stating the day on which the candidate was born.

trate, taken by one of his parents, giving his exact age; (b.) A certificate from the minister of the church or denomination to which he belongs, of his having been duly instructed in the principles of the Christian religion.

6. His name having been placed upon the list of candidates, it will be open to him to offer himself at any one of the half-yearly examinations which may occur while he is within the prescribed limits of age. If he is unsuccessful at this examination, he will be allowed to present himself at any subsequent examination until he has exceeded the maximum age. His want of success, however, in these examinations, will not preclude him from entering the Army, on obtaining a direct Commission in the usual manner.

7. He will be examined by a medical officer who will ascertain whether he is free from all bodily and organic defects, and whether, as far as regards physical constitution, he is in every point of view fit for military service.

8. The following are the subjects in which papers will be set at the half-yearly examinations for admission, together with the number of marks at present assigned to each subject, viz. :—

Classics $\begin{cases} \text{Latin, } 2,000 \\ \text{Greek, } 1,600 \end{cases}$	.	.	3,600
Mathematics	.	.	3,600
English Language	.	.	1,200
Modern languages, each	.	.	1,200
History with Geography	.	.	1,200
Natural Sciences (i. e., Mineralogy and Geology)	.	.	1,200
Experimental Sciences (Chemistry, Heat, and Electricity, including Magnetism)	.	.	1,200
Drawing	.	.	600

Of the above subjects, the Elementary Portions of Mathematics and the English Language are obligatory on each Candidate.

The following elementary branches will be included in the obligatory section of Mathematics, viz. : —

In Arithmetic; vulgar and decimal fractions, proportion, extraction of the square root, and interest.

In Algebra; fractions, simple equations, and questions producing them.

In Euclid ; the first two books.

To these elementary branches, 1,200 marks (out of the whole 3,600 for mathematics) will be allotted, and it will be necessary for qualification that at least 400 be obtained, of which 200 must be obtained in Arithmetic.

In the English Language, 400 marks will be allotted to correct and legible writing from dictation, and to composition ; and, of these, it will be necessary for qualification that 200 be obtained.

And in addition to the marks above stated as necessary for qualification in Mathematics and English, every candidate will be required to obtain, in these and the other subjects of examination, such a further number of marks as shall raise the entire number he obtains to 1,000.

No marks will be allowed to count in any subject left optional to the candidate, unless he gain at least one sixth of the whole number allotted to that subject.

9. Every candidate will be required to forward to the Secretary of the Council of Military Education, one month before the examination for which he intends to offer himself, a statement of the subjects he desires to take up, as well as a certificate from the master or tutor under whom he has been educated, of his general moral conduct for at least the two preceding years. If a candidate has failed in a previous examination, he will only be required to forward a list of the subjects he selects, and a certificate of conduct between the two examinations.

10. After the examination, the candidates will be reported to the Commander-in-Chief in the order of their merit; and those who obtain the greatest number of marks, will succeed to the vacancies in the College.

11. When the success of a candidate shall have been declared, he will be required, forthwith, to communicate to the Secretary to the Commissioners of the Royal Military College, at the Horse Guards, S.W., full particulars as to the rank or position of his father, in order to the regulated rate of subscription to be paid by him being settled, according to Section III.

12. Every candidate for admission as a Queen's Cadet, must apply for a nomination to the Commander-in-Chief if he is the son of an Officer in the Army ; or to the First

Lord of the Admiralty, if he is the son of an Officer in the Royal Navy, or Royal Marines. The nominations will be made by the Commander-in-Chief or First Lord of the Admiralty, with the concurrence of the Secretary of State for War.

13. Every Queen's Cadet, on receiving his nomination, will be required to pass a qualifying examination to the extent specified in Paragraph 8.

II. *Provision of Necessaries.*

1. Before joining the College, every Gentleman Cadet must be provided with the following articles ; viz. :—

> A leather portmanteau,
> A clothes bag, made of ticking,
> A small looking glass,
> A clothes brush,
> Hair brushes and combs,
> Nail and tooth brushes,
> 2 pairs of white Berlin gloves,
> 8 day shirts,
> 4 night shirts,
> 8 pairs of cotton socks,
> 8   „   worsted   „
> 8 pocket handkerchiefs,
> 4 pairs of stocking web drawers,
> 6 towels,
> 3 Jerseys,
> A Bible and Prayer-book.

2. These articles must be provided and kept complete at the expense of the Cadet, or his parent or guardian.

3. All Cadets, except Queen's Cadets, will be further required to provide themselves, on entrance, with a large case of mathematical instruments and scales (according to a pattern which may be seen at any of the principal mathematical instrument makers in London), together with such books as will be necessary for the commencement of their studies. A list of these books will be furnished to them by the College. Both the books and instruments may be obtained at the College, and must, if so obtained, be paid for on the admission of the Cadet.

All other books which may be necessary for the prosecution of their studies, will be provided for them at the expense of their parents or guardians.

III. *Payments, Contributions, &c.*

1. The payment for education, board, washing, and medical attendance, on account of each Cadet, will be as follows :—

		Per Annum.
a. For sons of Private Gentlemen .	.	£100
b. For sons of Admirals, and General Officers having Regiments	. .	80
c. For sons of General Officers not having Regiments		70
d. For sons of Captains and Commanders of the Royal Navy, and Field Officers of the Army having substantive rank .		50
e. For sons of all Officers of the Army and Navy under the above rank	.	40
f. For sons of Officers of the Army and Navy who have died in the Service, and whose families are proved to be left in pecuniary distress . .		20
g. Queen's Cadets		Free.

2. Officers who have voluntarily retired on half-pay, or received the difference in so doing, as well as those who have sold their Commissions, are, in this classification, reckoned as private gentlemen.

3. The orphans of Officers whose claims do not come under classes *f* and *g*, must subscribe according to the substantive rank last held by their fathers.

4. For sons of Officers who have retired on full pay, the payments will be according to the substantive rank last held by their fathers.

5. The sons of Officers of Civil Departments of the Army and Navy, of the Permanent Militia Staff, and of Adjutants of the Volunteer Force, are admissible to the College on the same terms as those prescribed for the sons of Officers of the Army and Navy of corresponding rank.

6. The sons of Indian Naval and Military Officers will be admitted on the same terms as the sons of Officers of the Queen's service.

7. Payments for the sons of Professors at the Staff and Royal Military Colleges, and at the Royal Military Academy, will be . . . £50

For the sons of masters at the above Institutions 40

8. Any change which·may take place by promotion or retirement in the rank of the father of a Cadet must be immediately notified to the Lieutenant-Governor of the College, in order that the subscription paid to the College on account of such Cadet, may be regulated accordingly.

9. On the admission of a Cadet (not a Queen's Cadet) the parent or guardian will be required to make the following payments in advance, viz. :—

1. His subscription to the 30th June or 31st December ensuing.
2. The sum of £20 for the provision of uniform coat, trousers, dress cap, great coat, &c., for his first equipment, and clothing for the remainder of the year in which he enters.
3. The sum of £2 for the support of the College Library.
4. A deposit of £20 for contingent expenses on account.

All of which sums are to be paid into the hands of the Paymaster at the College, in Bank of England notes or gold.

10. The regulated subscription for each succeeding half-year must be paid into the Bank of England to the account of the College on the 1st January and 1st July; and at the commencement of each new year, during the residence of a Cadet, a further sum of £10 must be transmitted to the Paymaster for the provision of clothing, &c.

11. At the close of every half-year an account will be rendered of the sums paid out of the contingent deposit during the past term, when the parent or guardian will be required to make up the balance remaining in hand to the full amount of £20.

12. No Cadet on whose behalf these regulations in regard to payments have not been complied with will be re-admitted to the College.

13. No refund of subscription will be made by the College to the parent or guardian of a Cadet for any portion of the half-year in which such Cadet may be removed from

the College, and for which the usual contribution has been paid in advance, without the special authority of the Secretary of State for War.

14. No payments will be required from Queen's Cadets.

IV. *Discipline.*

1. All Gentlemen Cadets are subject to such rules and regulations as are, or may be, from time to time established for the maintenance of good order and discipline.

2. Every Gentleman Cadet will be liable to be removed from the College at any time, should his conduct be such as to render it obvious that his remaining longer would be either hurtful to the Institution or unprofitable to himself.

3. Parents or Guardians are recommended not to allow their sons or wards to join the College with a larger amount of money in their possession than two guineas, and no money is to be sent to them during the term.

4. Every Gentleman Cadet will be supplied with a weekly allowance of pocket money, at the discretion of the Lieutenant-Governor of the College; but this allowance will not exceed four shillings and sixpence a week for a Gentleman Cadet who is a responsible under Officer, four shillings a week for a Gentleman Cadet who is an under Officer, three shillings and sixpence a week for a Gentleman Cadet who is a Corporal, and two shillings and sixpence a week for all other Gentlemen Cadets. The expense of this allowance will be defrayed out of the amount deposited for the purpose of meeting contingent expenses, and in the case of Queen's Cadets it will be borne by the Public.

5. Gentlemen Cadets are prohibited from contracting debts with any tradesman in the vicinity of the College; and it is requested that such debts may not be paid, as the practice of contracting them would be injurious to the reputation of the College.

6. No perquisites or presents of any kind are to be received by any person belonging to the College from either the Gentlemen Cadets or their friends.

7. Cadets will not be allowed to remain at the College during the vacations, except those Queen's Cadets who,

having no friends to receive them, may have obtained the necessary permission under special sanction of the Secretary of State for War; or such others as may be detained by order of the Governor, for misconduct during the previous term; any extra expense incurred by these last being made a charge against the parents or guardians.

V. *Termination of the Course and Removal from the · College.*

1. The period of study will not exceed two years.

2. All Gentlemen Cadets will be examined periodically for Commissions, a limited number of which will be given without purchase, and which number will be announced previous to the examination.

These Commissions will be competed for and given to the candidates as they stand in order of merit.

Those candidates who have obtained the minimum number of marks, namely, 1800, will be eligible for Commissions by purchase, and will be considered to have prior claims to all other candidates for Commissions by purchase.

In every case a certificate of good conduct and proficiency in Military Exercises will be required from the Governor of the College, and Commissions in the Cavalry, or the Line, the number of which will have been previously announced, will be given to the first Candidates in order of merit, provided they obtain at least 3,000 marks. The remainder of those who pass will be equally eligible for Commissions with those who have passed for direct Commissions, but they will have the priority of appointment over the latter, provided they have obtained certificates of good conduct and proficiency in their Military Exercises. The minimum, in their case, will be 1,800 marks.

3. Any Gentleman Cadet desirous of entering the Royal Artillery or Royal Engineers will be permitted to offer himself as a candidate at any of the competitive examinations for admission into the Royal Military Academy at Woolwich, held after he shall have attained the requisite age; and his position at the Royal Military College will not be affected by his failure at such examination.

4. Since Commissions are given at the College as rewards for application and good conduct, they can be obtained only in the manner above stated ; but no Gentleman Cadet will be precluded from entering the Army in the usual manner, by passing the qualifying examination for a direct Commission.

5. When application is made to the Commander-in-Chief for a direct Commission for any Gentleman Cadet at the College, the fact of his being at the College is to be expressly stated in the application. In cases in which this rule is not complied with, any appointment which the candidate may obtain by passing the examination for a direct Commission will be cancelled, even though it may have been gazetted.

6. No Gentleman Cadet is to be removed from the College without the permission of the Commander-in-Chief, obtained through the Governor of the College. And when a parent or guardian intends to remove a Cadet at the end of a term, at least six weeks' notice of his intention is to be given to the Governor. In default of such notice a quarter's subscription must be paid.

VI. *Miscellaneous.*

1. The Establishment for Queen's Cadets having been sanctioned by Parliament, when the age of admission to the Royal Military College was from 13 to 15 years, it has been decided that in any case when the services of the father and the circumstances of his family are such as to constitute a claim, an addition of not more than £40 a year to the " Compassionate Allowance" may, at the discretion of the Secretary of State for War, be allowed to a candidate who is over 13, but who is ineligible for immediate admission into the College in consequence of the minimum age of admission having been raised to 16, to enable him to complete his preparatory education.

2. It is desirable that every candidate should, at his admission, be accompanied by his parent, guardian, or some other responsible person to satisfy the requirements of the College on his behalf.

3. The responsible parent or guardian of every Gentleman Cadet is to sign the subjoined certificate before the admission of his son or ward :—

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" These are to certify that I have attentively considered
the Regulations of the Royal Military College at Sandhurst,
relative to the admission and training of Gentlemen Cadets,
and that I am willing to abide by them. And I promise to
remove my son or ward from the College during the vaca-
tions, unless otherwise ordered."

Subjects of the Final Examination.

Subjects in which the Minimum stated is obligatory for
Qualification : —

	Min.	Max.
Arithmetic, Algebra, including Simple Equations ; Euclid, the first 3 Books; and Practical Geometry	300	900
Fortification (lower Course)	350	1050
Military Drawing and Field Sketching	300	1200

In the following subjects the Minimum stated is *not* in-
dispensable for Qualification.

	Min. allowed to count.	Max.
The higher Mathematics (pure)		1000
Do. applied to Geodesy and Mechanics		1400
Fortification (higher Course)		1050
*French	400	1200
*German	300	1200
Latin (for Cadets only who joined the College on the old system)	200	1200
History and Geography	200	1200
Geology	200	1200
Chemistry	200	1200.
Landscape Drawing	100	600

	Marks.
General Total required for Qualification for Commission	1800

EXTRACTS FROM

EXAMINATION PAPERS.

SANDHURST.

ENGLISH LANGUAGE, LITERATURE, AND COMPOSITION.

1. Write an essay on "London."

2. Describe in a letter the hall in which you are sitting.

3. Describe very briefly, in the first person, some occurrence as having happened to yourself; and then turn the passage from the direct into the oblique (*i.e.* the indirect) narration.

4. Explain the term "sentence." What is the smallest number of words of which a sentence can consist? Is there any limitation to the number of words which it may contain?

5. Quote as many English proverbs as you can remember, and explain them.

6. When does the word "its" first appear in the English language? Explain the origin of that form of the genitive.

7. Give the derivations of the following words : assassin, barbarian, captain, lieutenant, ensign, serjeant, private, dragoon, musket, cannon, claymore, bayonet, halberd, pagan, parson.

8. Write a short life of Milton, and give a list of his poetical works.

9. Describe the plot of any one of Sir Walter Scott's novels.

10. Quote any lines that you may remember from British Poets which have become proverbial.

11. Compare the style and turn of thought of any two prose writers of the present day.

HISTORY AND GEOGRAPHY OF THE BRITISH EMPIRE.

Number of Marks . . . 1,200

[The Candidate is requested not to attempt to answer the whole, or even the greater part, of the questions on this paper.]

1. What were the chief causes which led Henry the 5th to invade France? Sketch briefly the events of the war which followed, and state the terms of the Treaty which concluded it.

2. What part did Henry the 8th take in the Reformation? State the motives by which he seems to have been actuated.

3. Enumerate the men who are mentioned in English history as the sovereign's *favourites*. State shortly the causes of the unpopularity of each.

4. What English Kings have displayed military genius? State the character of the domestic policy of each.

5. What do you understand by the following expressions? " The Constitutions of Clarendon," the " Star Chamber," " The Petition of Right," and " The Habeas Corpus Act."

6. Describe the chief incidents in the history of Scotland, from the death of Queen Elizabeth to the death of Queen •Anne.

7. When and under what circumstances were the following battles fought: Aboukir, Cressy, Blenheim, Dunbar, Corunna, Bunker's Hill, Marston Moor, Fontenoy, Vittoria, Sobraon, and Inkerman.

8. On the accompanying map of Europe insert the names of the seas, islands, chief bays, and headlands.

9. Mention the names of the chief British Colonies, and give some account of their natural products.

10. Give some account of the East India Company, and show how it acquired political power in India.

11. How did Great Britain acquire possession of the Cape of Good Hope, Jamaica, Trinidad, Labuan, Singapore, Hong-Kong, Heligoland, Malta, Gibraltar, Aden, Canada, the Falkland Islands, and New Zealand?

ANCIENT HISTORY.

1. Name the great Asiatic empires of antiquity; and state the causes of the rise and fall of each.

2. Give accounts of the four or five most illustrious Greeks, not of Athenian, or Macedonian extraction.

3. Give an account of the struggle between Pyrrhus and the Roman Republic.

4. Write a short life of Epaminondas.

5. What traces have the Romans left behind them of their rule in Britain?

MODERN HISTORY.

1. Sketch briefly the course of the Religious Wars in France.

2. Write a short sketch of the History of Holland.

3. Who was the last king of Poland? How did Poland lose her independence?

4. Mention the family names of the Kings and Emperors who now reign in Europe.

5. How did the Bourbons come to the Neapolitan Throne?

MATHEMATICS.

Morning Paper.

OBLIGATORY PORTION.

Arithmetic.

1. Find the value of 2148 coats, at £1. 7s $2\frac{1}{4}d$ for each coat.

2. Multiply £14. 13s $7\frac{1}{2}d$ by 237.

3. Find the sum of $\frac{3}{5}$ of 13s 4d, $\frac{5}{7}$ of £4. 7s 6d, and $\frac{9}{11}$ of £9. 8s 10d.

4. Find the value of 3 cwt. 2 qrs. 16 lbs. at £3. 7s 8d per cwt.

5. If the carriage of 41 cwt. 1 lb. for 49 miles, cost £20. 9s 6d, what must be given for the carriage of 13 cwt. 2 qrs. 19 lbs. for 35 miles ?

6. Add together $\frac{5}{8}$, $\frac{7}{16}$, $\frac{3}{4}$, ·09375, and 2·46.

7. Divide ·0048 by 1·2 and 213·419596 by 1·00103.

8. Find the cost of paving a street, half a mile long and 47 feet wide, at $8\frac{1}{2}d$ per square yard.

9. Find the interest on £237. 10s for 4 months at 4 per cent. per annum.

10. Extract the square root of ·191810713444.

Euclid.

1. If one side of a triangle be produced, the exterior angle is greater than either of the interior opposite angles.

2. Describe a parallelogram equal to a given rectilineal figure, and having an angle equal to a given rectilineal angle.

VOLUNTARY PORTION.

1. Inscribe a circle in a given equilateral and equiangular pentagon.

2. If a quadrilateral figure is bisected by one diagonal, the second diagonal is bisected by the first.

3. Find the length of a side of a square which is equal in area to the rectangle the sides of which are 513 yards 1 foot 11 inches and 1628 yards 11 inches.

4. Find the cost of carpeting a room measuring 12 feet 4 inches by 16 feet 3 inches, at 1s 6d per square foot.

5. A, B and C can build a wall in 10 days ; A and B in 13 days ; B and C in 15 days ; in what time would A and C perform the work ?

6. Calculate by logarithms

(1) $\left(\dfrac{347}{123}\right)^5$

(2) $\left(\dfrac{5}{7}\right)^{·1345}$

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MATHEMATICS.

Afternoon Paper.

OBLIGATORY PORTION.

Algebra.

1. Simplify the following expression, and find its value when $a = 4$, $b = 6$, $x = 12$, $y = 10$

$$a + 2x - \{ b + y - [a - x - (b - 2y)] \}$$

2. Divide the product of

$a^2 + ax + x^2$ and $a^3 + x^3$ by $a^4 + a^2x^2 + x^4$.

3. Find the greatest common measure of—

$x^2 - 6x + 8$ and $4x^3 - 21x^2 + 15x + 20$;

reduce the following fraction to its simplest form :—

$$\frac{8x^3 - 42x^2 + 30x + 40}{x^3 - 6x^2 + 8x.}$$

4. Solve the following equations

(1.) $\dfrac{3x - 7}{5} + \dfrac{25 - 4x}{9} = \dfrac{5x - 14}{3}.$

(2.) $x + 1 = 5y$; $\frac{1}{5}(2x + 7y) - 1 = \frac{2}{3}(2x - 6y + 1).$

5. There is a fraction which becomes equal to $\frac{1}{3}$ if 1 be added to its numerator, and becomes equal to $\frac{1}{4}$ if 1 be added to its denominator ; determine the fraction.

Euclid.

1. In any right angled triangle the square which is described upon the side subtending the right angle is equal to the squares described upon the sides which contain the right angle.

2. If a straight line be divided into two equal and also into two unequal parts, the rectangle contained by the unequal parts together with the square of the line between the points of section is equal to the square of half the line.

Voluntary Portion.

1. In a right angled triangle if a perpendicular be drawn from the right angle to the base, the triangles on each side of it are similar to the whole triangle, and to one another.

2. Find the sum of n terms of the arithmetical progression 1, 3, 5, 7, . . .

3. Prove the formulæ

$$\sin (A + B) = \sin A \cos B + \cos A \sin B$$
$$\cos (A + B) = \cos A \cos B - \sin A \sin B.$$

Find the sine and cosine of 15°.

4. Prove that

$$\sin 4A = 4 \sin A \cos^3 A - 4 \cos A \sin^3 A.$$

5. A line AB, 270 feet long, is measured close by the side of a river, and a point C close to the bank of the river on the other side is observed from A and B, the angle CAB is 70° and CBA is 52°, find the breadth of the river.

LATIN.

Grammatical Questions.

1. What is the meaning of the word Pronoun ? Write down the personal, possessive, and demonstrative pronouns of the Latin language.

2. Decline *alter, duo, unus, uter, idem, nemo.*

3. Of what gender are the nouns—*tellus, vellus, silex, vomer, agmen, amnis, ros, messis, calor.*

4. What is the difference between *ter, tres, tertius, ternus?* Write four short Latin sentences containing them severally.

5. Conjugate *nolo, volo, malo,* through all the persons of the present tense.

6. Give the perfects, supines and participles of *rumpo, lavo, quæro, premo, mordeo, consulo.*

7. What is the government of adjectives expressing plenty or want ? Give instances.

8. Translate into Latin :—

I hardly know what to do.

Pray be silent.

I wonder what business you have here.

Tell him all about that affair.

Passages for Translation.

1. Galba, consilio celeriter convocato, sententias exquirere
cœpit.
Lentulus Reipublicæ se non defuturum pollicetur.
Itaque plenus spei bonæ atque animi, adversus eos proficiscitur.

2. Quis homo quis Deus est quem accusare possitis ?
Vestra illa temeritas erat, vestra ignavia hæc est.
Secuti alium ducem victi estis, sequimini nunc
Camillum, et quod ductu meo soletis vincite.

Virgil.

3.　　Nisus erat portæ custos, acerrimus armis,
Hyrtacides ; comitem Æneæ quem miserat Ida
Venatrix, jaculo celerem levibusque sagittis ;
Et juxta comes Euryalus, quo pulchrior alter
Non fuit Æneadum, Trojana neque induit arma ;
Ora puer primâ signans intonsa juventâ.

Sallust.

4. De timore, supervacaneum est disserere, cum præsehti
diligentiâ clarissumi viri consulis, tanta præsidia sint in
armis.　De pœnâ, possum equidem dicere id quod res habet;
in luctu, atque miseriis, mortem rerumnarum requiem, non
cruciatum, esse ; eam cuncta mortalium mala dissolvere ;
ultra neque curæ, neque gaudio locum esse.

Horace.

5. Fortes creantur fortibus et bonis.
Est in juvencis, est in equis patrum
　　Virtus ; neque imbellem feroces
　　　　Progenerant aquilæ columbam.

Doctrina sed vim promovet insitam,
Rectique cultus pectora roborant :
　　Utcunque defecere mores,
　　　　Dedecorant bene nata culpæ.

Tacitus.

6. Meliore fato fideque partium Flavianorum duces consilia
belli tractabant.　Petovionem in hiberna tertiædecimæ

legionis convenerant. Illic agitavere, placeretne obstrui Pannoniæ Alpes, donec a terno vires universæ consurgerent: an ire cominus et certare pro Italia constantius foret.

For translation into Latin Prose:—

7. The mind of Diocletian himself was less adapted indeed to speculative inquiries than to the active labours of war and government. His prudence rendered him averse to any great innovation; and though his temper was not very susceptible of zeal or enthusiasm, he always maintained an habitual regard for the ancient deities of the empire.

For Latin Elegiacs:—

8. As slow our ship her foaming track
   Against the wind was cleaving,
   Her trembling pennant still looked back
   To that dear isle 'twas leaving.

   So loath we part from all we love,
   From all the links that bind us,
   So turn our hearts as on we rove
   To those we leave behind us.

GREEK.

1. Decline the pronouns οὗ, οὗτος, αὐτός.

2. Parse the words—

   γέγηθε, λελέχθαι, ἐγενήθη, εἰήτην, ἑάλων.

3. What tenses of verbs are formed from the first future and second aorist respectively, and how?

4. Conjugate ἵστημι in the active voice, giving the English of each tense.

5. Give the genitive singular and dative plural of ποιήτης, γόνυ, χείρ, λείμων, βασιλεὺς, κάρα.

6. Explain the following constructions:—

   συμβάλλεται δὲ πολλὰ τοῦδε δείματος.

   χωροῖς ἂν εἴσω σὺν τάχει.

7. From what verbs do ἦλθον, ἐγήγερται, πεύσομαι, λέλοιπα, ἀξιώσεται, ἦξα, ἔθανε, σχές, come from, and what tenses are they?

8. What moods may follow ὅτε, ὅποτε, ὅταν, ὁπόταν?

9. Translate literally—

Ἄνδρες Πέρσαι, ὑμεῖς καὶ ἔφυτε ἐν τῇ αὐτῇ ἡμῖν χώρᾳ, καὶ ἐτράφητε, καὶ τὰ σώματά γε ἡμῶν οὐδὲν χείρονα ἔχετε, ψυχάς τε οὐδὲν κακίονας ὑμῖν προσήκει ἡμῶν ἔχειν.

10. What are the rules of Tragic trimeter Iambics?

Thucydides.

11. Ἡ μὲν ἔκπεμψίς μου καὶ τῆς στρατιᾶς ὑπὸ Λακεδαιμονίων ὦ Ἀκάνθιοι, γεγένηται τὴν αἰτίαν ἐπαληθεύουσα ἣν ἀρχόμενοι τοῦ πολέμου προείπομεν Ἀθηναίοις, ἐλευθεροῦντες τὴν Ἑλλάδα πολεμήσειν· εἰ δὲ χρόνῳ ἐπήλθομεν, σφαλέντες τῆς ἀπὸ τοῦ ἐκεῖ πολέμου δόξης, ᾗ διὰ τάχους αὐτοὶ ἄνευ τοῦ ὑμετέρου κινδύνου ἠλπίσαμεν Ἀθηναίους καθαιρήσειν, μηδεὶς μεμφθῇ· νῦν γὰρ ὅτε παρέσχεν ἀφιγμένοι καὶ μετὰ ὑμῶν πειρασόμεθα κατεργάζεσθαι αὐτούς.

Herodotus.

12. Ἐν ταύτῃ τῇ πόλι ὑποκατήμενος Πύθιος ὁ Ἄτυος, ἀνὴρ Λυδός, ἐξείνισε τὴν βασιλέος στρατιὴν πᾶσαν ξεινίοισι μεγίστοισι καὶ αὐτὸν Ξέρξεα, χρήματά τε ἐπηγγέλλετο βουλόμενος ἐς τὸν πόλεμον παρέχειν. ἐπαγγελλομένου δὲ χρήματα Πυθίου, εἴρετο Ξέρξης Περσέων τοὺς παρεόντας, τίς τε ἐὼν ἀνδρῶν Πύθιος καὶ κόσα χρήματα κεκτημένος ἐπαγγέλλοιτο ταῦτα· οἱ δὲ εἶπαν· ὦ βασιλεῦ, οὗτός ἐστι ὅς τοι τὸν πατέρα Δαρεῖον ἐδωρήσατο τῇ πλατανίστῳ τῇ χρυσέῃ καὶ τῇ ἀμπέλῳ· ὃς καὶ νῦν ἐστι πρῶτος ἀνθρώπων πλούτῳ τῶν ἡμεῖς ἴδμεν μετὰ σέ.

Euripides.

13.　　τὼ παῖδε τὼ σὼ μέλλετον, τολμήματα
　　　αἴσχιστα, χωρὶς μονομαχεῖν παντὸς στρατοῦ,
　　　λέξαντες Ἀργείοισι Καδμείοισί τε
　　　ἐς κοινὸν οἷον μήποτ' ὤφελον λόγον.
　　　Ἐτεοκλέης δ' ὑπῆρξ' ἀπ' ὀρθίου σταθεὶς
　　　πύργου, κελεύσας σῖγα κηρῦξαι στρατῷ.

14. For Greek Prose :—

It was about ten o'clock when the battle began ; the first charge was given by the prince who with his own and his brother's troop performed it with his usual vigour, and was so well seconded that he bore down all before him.

15. For Greek Iambics :—

Richard.   But what art thou, whose heavy look foretells
            Some dreadful story, hanging on thy tongue ?
Messenger. Ah ! one that was a woeful looker on.
Edward.   ' Oh ! speak no more, for I have heard too much.
Richard.   Say how he died, for I will hear it all.

GEOMETRICAL DRAWING.

[The work is to be inked in, and the lines of construction dotted. A portion of the marks will be allotted to neatness and accuracy.]

1. Construct an equilateral triangle on a line 1·35 inches long, and in it inscribe a circle.

2. Construct angles of 15°, 30°, 45°, 60°, 120°, respectively, without the aid of a protractor.

3. Draw a scale of 4 miles to an inch to measure yards, and give its representative fraction.

4. Draw the plan of a rectangular sheet of card board, measuring 20 inches × 24 inches, resting on its longer edge on a horizontal surface, and inclined at an angle of 30° to the horizon.   Scale $\frac{1}{10}$th.

5. Give a perspective view of two rectangular blocks of stone lying horizontally on their sides one on the top of the other, and crossing each other at right angles at the middle of their lengths.   Each block measures 3 feet long by 1 foot wide, by 9 inches deep.   The eye of the observer is opposite one corner of the upper stone, $4\frac{1}{2}$ feet distant from it, and 3 feet above the ground.   The longer side of this stone is inclined (in plan) at an angle of 40° to the picture plane, from which its nearest corner is $1\frac{1}{2}$ feet distant.   Scale $\frac{1}{12}$th.

FRENCH.
I.

Translate into English :—

Funérailles de Sir Robert Peel.

Les éloges, les regrets, les témoignages universels d'estime et de sympathie nationale et étrangère retentissaient encore

quant, le 9 juillet, vers une heure après midi, le cercueil de Sir Robert Peel partit du château de Drayton pour se rendre, à travers le parc et les champs, à l'église de la paroisse. Sa famille, ses principaux amis politiques, venus le matin de Londres, les serviteurs de sa maison, les fermiers et les laboureurs de ses terres formaient le cortége.—GUIZOT.

II.

Grammatical Questions.

1. How do nouns ending in *eau, au, eu,* or *œu,* form their plural?
2. What is the *cédille* in French, and what is the use of it? Give examples.
3. According to what rule do you form comparatives and superlatives? Give examples.
4. Write in French these numbers: 1780, 150,000, 290.
5. Write out the imperative of the verbs *périr* and *mourir.*
6. What is the difference between *qui* and *que?*
7. Write out the present and past participles, the present, indicative mood, and past definite of the verb *avoir.*

III.

Translate into French :—

Henri IV., King of France, one day reached Amiens after a long journey. A local orator was deputed to harangue him, and commenced with a great many epithets : "Very great sovereign, very good, very merciful, very mag-nanimous—" "Add also," interrupted the king, "very tired."

GERMAN.

1. Translate into English :

Als Harold Haarfagr die übrigen Norwegischen Häuptlinge seiner Herrschaft unterwarf und den Germanischen Staat in die neuen Formen des Feudalwesens umzugestalten strebte, da verließen viele der besten und tüchtigsten Männer Norwegens den heimischen Boden, und siedelten sich in fremden Ländern an, um frei und unabhängig, wie ihre Väter, zu leben.

2. Translate into German:

How long have you been reading German? It rains so hard that we must not think of going out. My father does not wish me to leave the country. No one ought to be a soldier who is not ready when his duty calls him, to lay down his life for his country.

3. Translate into German:

How much more time than is necessary do we spend in sleep, forgetting that the sleeping fox catches no poultry, and that there will be sleeping enough in the grave.

Grammatical Questions.

1. Decline, in the singular and plural: Was für ein Buch.

2. Give the meaning, and write the plural of: Lamm, Ei, Schuh, Mond, Herz, Kaufmann, Kloster.

3. What is the meaning of:

Anheimstellen,
Hervorbringen,
Vorausseßen.

4. Write the Past Participle of—

Springen,
Verbleichen,
Wachsen.

MINERALOGY AND GEOLOGY.

1. Give the scientific definition of a *mineral*.

2. State in what way minerals may be recognized by their crystalline forms.

3. Define a rhomb, a rhomboid, and a prism.

4. What is meant by the optic axis of a crystal?

5. Explain what is meant by the terms "conformable" and "unconformable" stratification.

6. What are the general crystalline forms, the composition, and uses of Fluor Spar?

7. What is the composition of Saltpetre, and how is it obtained?

8. What are the principal characters of yellow mica, and

of iron pyrites,—and how are they to be readily distinguished from gold?

9. State the object and mode of conducting the geological survey of a country.

10. What is the origin and arrangement of the rocks termed stratified?

11. Enumerate and draw the primary crystalline forms.

12. What is meant in Geology by a fault?

13. Mention some of the fossils which characterise the coal period.

14. Name any orders or genera of Animals which first appear in the Tertiary System.

15. What is Basalt, and what its origin and characteristic structure?

16. Explain the nature and cause of the incrustation which forms in boilers, when hard water is used?

EXPERIMENTAL SCIENCES.

1. Write the formulæ of carbonic oxide and carbonic acid, and state how one of them may be converted into the other, and how they may be distinguished from each other.

2. The flames of our street lamps become less luminous when a sudden gust of wind acts on them; state the reason.

3. Express in the form of an equation the production of nitric acid and sulphate of potash from sulphuric acid and nitrate of potash.

4. What do the curves indicate which are formed when iron-filings are shaken over a piece of paper placed upon a magnet? Give a sketch of the forms of those curves in the case of a straight bar magnet and of a horseshoe magnet.

5. The metals were formerly called *non-electrics*, while glass, resin, &c., were called *electrics*, because it was thought that electricity could be excited on the latter but not on the former. State your grounds for rejecting this classification, and describe a method by which a metal may be electrified by friction.

6. I give you a magnetic needle, and also the means of producing an electric current, and wish you to communicate,

by means of signs agreed upon between you both, a short word to your friend who occupies a distant room; tell me exactly how you would arrange your apparatus.

7. A flounder is placed on a plate of zinc, and a silver spatula is placed upon the fish; when the silver and zinc touch each other the fish jumps: why? A piece of zinc is placed on the tongue, a piece of silver under it, when they touch you experience a peculiar taste. What is its origin?

8. If you observe the funnel of a locomotive on a dry day the escaping vapour soon disappears; but not so quickly as on a moist day. Explain this, and state how the steam becomes at all visible.

9. State briefly what you suppose to be the causes of wind and rain.

10. An ounce of hot metal dipped into an ounce of cold water loses 20 degrees of its temperature; the water becomes heated 1·5 degrees: what is the specific heat of the metal?

11. Describe some one form of the compensating pendulum, and add to your description a statement of the principles on which its construction is based.

DIRECT COMMISSIONS.

Gentlemen obtaining their Commissions direct, are not required to go through a course of study at either of the Military Colleges, but are permitted to join their regiment as soon as they receive their appointment. They must first, however, obtain the qualifying number of marks at one of the Examinations which are held about 5 times a year at Chelsea.

Direct Commissions are granted in Her Majesty's Guards, Cavalry and Infantry; but until the large number of super-numeraries caused by the late mutiny in India are absorbed, none will be given in Her Majesty's Indian Regiments.

These Commissions are divided into two classes :—
    1st.—By purchase.
    2nd.—Without purchase.

By PURCHASE.—Any gentleman desirous of obtaining a Commission by purchase, will not find it a very difficult

matter. His wisest plan would be to ask some influential friend, a magistrate, clergyman, or country gentleman, to write to the Military Secretary of H.R.H. the Commander-in-Chief, requesting that the candidate's name may be placed upon the list of those who wish to be examined in the usual manner.

WITHOUT PURCHASE.—But should the Commission be required without purchase, it will not be so easy, as the number of such is limited, and many of them reserved for the most deserving of the Sandhurst Cadets. Should the Candidate, however, have any claim upon the gratitude of his country, such as may arise, for instance, from the fact of his father, or any near relative, having fallen in action, or succumbed to disease while on service abroad, he will have a fair prospect of success. It would however be advisable that his case should be urged by some well known Officer, who may himself be acquainted with the details of the circumstances pleaded.

COLONIAL CORPS.—Commissions are still granted without purchase, in some of the Colonial Corps, the candidate being exempt from any examination whatever.

It is expected that these direct appointments will soon be abolished, and every candidate for the Army will have to remain at least one year at a Military College, before he can be recommended for a commission.

This great change must necessarily take some time to carry out.

The following Regulations, in regard to the Examination of Gentlemen preparatory to their receiving Commissions in the Army, will take effect from this date in lieu of those issued on the 2nd August, 1858, and previous dates.

I. The Examinations of Candidates for direct Commissions will be held Quarterly, or oftener if necessary, in London, and conducted under the direction of the Council of Military Education, by Examiners appointed for the purpose.

II. The age of Candidates examined for direct appointments will be, until further notice, not under 18 years ; the latest limit for the Infantry being 23, and for the Cavalry 25 years.

III. The Candidate will be examined by a Medical Board, to ascertain that he is in every point of view, as regards his physical constitution, fit for Military Service.

He will be required to produce the following Certificates, which must be forwarded to the Council of Military Education, 1, Whitehall Yard, as soon as possible after the receipt of the Military Secretary's order to attend for examination..

    a. A Certificate of Baptism, or other satisfactory proof of his age.

    b. A certificate from a Minister of the Church or of the denomination to which he belongs, that he has been duly instructed in the principles of Religion.

    c. A certificate of good and moral character, signed by a Clergyman of the Parish to which he belongs, or by the tutor or head of the school or college at which he has received his education for at least two years; or such other proof of good moral character as will be satisfactory to the Commander-in-Chief.

    d. A statement of the subjects in which he wishes to be examined.

IV. The following will be the subjects of Examination and the number of Marks allotted to each, viz.:—

The Classics { Latin	2,000
{ Greek	1,600
Mathematics, pure and mixed	3,600
English Language	1,200
French, or any other Modern Language, including } Hindustani	1,200
History, Ancient and Modern, with Geography	1,200
Natural Sciences, i. e. Mineralogy and Geology	1,200
Experimental Sciences, i. e. Chemistry, Heat, Electricity, including Magnetism }	1,200
Drawing	600

V. Of the foregoing subjects, the elementary branches of Mathematics and the English Language, to the extent stated in the following paragraphs, will be considered obligatory:—

1. In Mathematics, 1,200 marks will be given to the following obligatory portions, viz., Arithmetic, including Vulgar and Decimal Fractions—Proportion—Extraction of the Square Root—and Simple Interest.

Algebra, including Fractions, Simple Equations, and questions producing them. Euclid, the first 3 Books.

Of the 1,200 marks allotted to the foregoing portions of Mathematics, 400 will be required for qualification, and of these at least 200 must be obtained in Arithmetic.

2. In the English Language the Candidate will be required to write correctly and in a good legible hand from dictation, and to compose grammatically. He will be required to obtain at least 200 marks in this subject.

And out of the remaining subjects or portions of subjects which are left to the option of the Candidate, it will be required that such a number of marks shall be obtained as shall raise the total number necessary for qualification to 1,800.

VI. In respect to the subjects marked as voluntary, candidates will not be allowed to count the marks gained in any one of these, unless they amount to one sixth of the whole number of marks allotted to that subject.

With regard to the Classics it will no longer be necessary for the Candidate to forward the names of the authors in which he wishes to be examined, as passages will be given for translation from the books usually read at schools; grammatical questions will be set, and English passages also given for translation into the Latin and Greek languages.

An unsuccessful candidate may be examined at any of the subsequent Examinations until he has exceeded the maximum age. In the subsequent Examinations, however, no credit will be given for any subject in which the Candidate may have passed on the former occasions.

VII. The result of each Examination will be reported to the Commander-in-Chief, and the names of any Candidates who distinguish themselves will be specially brought to his notice.

C. YORKE,

Military Secretary.

DIRECT COMMISSIONS.

EXAMINATION PAPERS.

ENGLISH LANGUAGE, LITERATURE, AND COMPOSITION.

1. Describe a thaw and its comforts and discomforts.
2. Write an essay on the following theme : " Winter."
3. Write a letter describing a boat-race.
4. Explain the difference between a metaphor and a simile, and give three examples of each.
5. The bulk of the English language is said to be derived from two earlier languages ; name them, and give examples of words derived from each.
6. Enumerate as many vulgarisms of speaking or writing as you can remember.
7. At what time did the following writers live ? Chaucer, Surrey, Spenser, Shakspeare, Milton, Dryden, Defoe, Pope, Addison, Gray, Cowper, Wordsworth, and Lord Byron.
8. Give an analysis of any short English Poem which you may choose to select.
9. Give one or two plain rules for writing a good English style.

HISTORY AND GEOGRAPHY OF THE BRITISH EMPIRE.

1. What do you understand by the terms " Heptarchy," " Danegelt," " Peter's Pence," when used in early English History ?

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2. Was the Feudal System ever introduced into England? If so, state at what time and by whom it was introduced.

3. What English kings had struggles with their subjects? Describe briefly in each case the course and result of the struggle.

4. Write a short life of King John.

5. Describe the campaigns of Edward the Black Prince in foreign countries.

6. Who were Dudley and Empson, and what was their fate?

7. What is the meaning of the word Parliament? At what period in English history did Parliaments become a power in the State?

8. Give à short sketch of Scottish History, from the Death of Cardinal Beaton to the Death of Mary, Queen of Scots.

9. Mark on the map the names and boundaries of the English Counties.

10. Mark by name on the map the course of one great line of railway, and mention—not on the map—the chief products and manufactures of the districts through which it passes.

11. By how many races are the British Isles inhabited? Mention the names of the languages spoken in the United Kingdom.

12. Compare the English national character with that of any other people, ancient or modern, with which you may be acquainted.

13. Draw a map of the possessions of England in Australia.

ANCIENT HISTORY.

1. Describe the legislation of Lycurgus at Sparta.

2. Write a life of Miltiades, *or* of Themistocles.

(N. B.)—*One* only of these lives to be attempted.)

3. Describe very briefly the rise and fall of Carthage.

4. Describe the Campaigns of Julius Cæsar in Britain.

5. Mention the names of the twelve first Cæsars.

6. What Barbarian tribes had most share in the overthrow of the Empire of the West?

.MODERN HISTORY.

1. Give the names of the Barbarian Tribes which settled in Britain, Gaul, Spain, Italy, and Africa, after the downfall of the Roman Empire.

2. Mention the Dynasties which have successively governed France from the time of Clovis to the present day.

3. When do we first hear of Hungary in the History of Europe? When did Hungary become attached to the Austrian Empire?

4. Write a short life of Louis XI. of France.

5. Describe the course of events which placed the Bourbons on the thrones of Spain and Naples.

6. What do you understand by the Germanic Confederation?

MATHEMATICS.

1. Divide 750*l.* among 3 persons so that their shares may be as the numbers, 7, 10, 13.

2. If a soldier step $\frac{3}{4}$ of a yard, how many steps will he take in 3 miles?

3. If 4180 lbs. of beef serve 176 men for 19 days, how many days will 1991¼ lbs. serve 59 men?

4. If $\frac{7}{24}$ of the cargo of a ship be worth 714*l.* 14*s.*, what is the value of the whole cargo?

5. Find the simple interest on 4968*l.* 15*s.* for 3 years at 4½ per cent. per annum.

6. Add together $2\frac{1}{2}$, $3\frac{2}{9}$, $5\frac{3}{8}$, and explain why fractions are reduced to a common denominator in addition.

7. Express 12*s.* 6¾*d.* and 4*l.* 12*s.* 6¼*d.*, each as decimals of a pound sterling.

8. Find the value of the following to 4 places of decimals:—

$$\sqrt{7}, \qquad \sqrt{\frac{4}{7}}, \qquad \frac{4}{3-\sqrt{7}}.$$

9. Extract the square root of (1) 154·157056, (2) 13 to four decimal places.

Euclid.

1. If the square described upon one of the sides of a triangle be equal to the squares described upon the other two sides of it the angle contained by these two sides is a right angle.

2. Describe a parallelogram which shall be equal to a given triangle, and have one of its angles equal to a given rectilineal angle.

Voluntary Portion.

1. Describe a circle about a given triangle.

2. Solve the following equation :

$$(x-7)(x-4) + (2x-3)(x-5) = 103.$$

3. Find the weight of a 10-inch spherical shell, the thickness of the shell being $3\frac{1}{4}$ inches, and the weight of a cubic inch of the metal 4·17 ounces.

4. Find by means of the logarithmic tables :

  1. $(14\cdot276)^{\frac{3}{4}}$

  2. The value of x, if $\left(\dfrac{7}{3}\right)^{x} = 700$

  3. The sum of the series $12 + 36 + 108 +$ &c. to 7 terms.

5. A hemispherical basin holds a gallon of water; find the diameter of the hemisphere, it being given that a gallon contains 277·27 cubic inches.

Afternoon Paper.

Obligatory Portion.

Algebra.

1. Account for $(a-b)^2$ and $(b-a)^2$ having the same value when $a = 7$ and $b = 3$; what is the value of $\dfrac{a^2 - b^2}{a+b}$ if $a = 7$ and $b = 3$.

2. From

$a^3 + 3a^2b + 3ab^2 + b^3$ take $a^2 - 3a^2b + 3ab^2 - b^3$.

Simplify

$$3x^3 + 2xy - \left\{4x^2 + y^2\right\} - \left\{xy - x^2\right\}.$$

3. Multiply together—
$$a+b-c, \ a-b+c \text{ and } b+c-a,$$
and divide the product by
$$a^2-b^2-c^2+2bc.$$

4. Reduce
$$\frac{2x+3y}{2x-3y} - \frac{2x-3y}{2x+3y}$$

Prove
$$(a+b-c)^2-(a-b+c)^2 = 4a(b-c).$$

5. Solve the following equations:

(1) $$\frac{2x-7}{3} - \frac{x-3}{5} = x - \frac{62}{5}$$

(2) $$\left.\begin{array}{l} \dfrac{x+y}{2} - \dfrac{x-y}{3} = 13 \\[2mm] \dfrac{x+y}{3} - \dfrac{x-y}{4} = 8\frac{1}{2} \end{array}\right\}$$

6. A General, after losing a battle, found that he had only $\frac{2}{3}$rds of his army left fit for action; $\frac{1}{9}$th of the army were wounded, and the remainder, 2000 men, were either killed or missing; of how many did his army consist before the battle?

Euclid.

1. If two straight lines cut one another within a circle the rectangle contained by the segments of one of them, is equal to the rectangle contained by the segments of the other.

2. If a point be taken within a circle, from which there fall more than two equal straight lines to the circumference, that point is the centre of the circle.

VOLUNTARY PORTION.

1. Triangles having the same altitude are to one another as their bases.

2. Inscribe an equilateral and equiangular pentagon in a given circle.

3. Solve the equations —
$$\frac{ax+by}{cz} = \frac{cz+ax}{by} = \frac{by+cz}{ax} = x+y+z$$

4. If sin A = ½, find tan A and sec A. Also find all the values of x which satisfy the equation—
$$\sec x \tan x = 2 \sqrt{3}$$

5. From the top of a hill I observe two consecutive mile-stones on the level ground in a straight line before me, and find their angles of depression to be 5° and 14° 30' respectively; find the height of the hill.

LATIN.

Grammatical Questions.

1. Which of the Cardinal Numerals are declinable, and which not ?

2. Decline the following words, through *both* numbers—*dos, mare, specus, ipse.*

3. Give the perfect tenses and infinitive moods of: queror, fruor, fio, edo, proficiscor, mereor, nanciscor.

4. Enumerate the different kinds of pronouns, and mention as many as you can under each class.

5. What are the derivations of: cogo, ambitio, mansuetus, facilis, importunus, eluvies ?

6. Show how supines in *um* and *u* are used.

7. What cases do antecedere, juvare, lædere, imperare, moderari, meminisse, præesse, govern ?

8. What is the government of verbs of asking, teaching, concealing ? Give instances.

9. When is *ut* followed by the present, and when by the imperfect subjunctive ? Illustrate your answer by translating :

> He went to Rome to see his brother.
> I have come here to see you.
> I came here to see you.

Translate them also without using the particle *ut*.

Passages for Translation.

10. Translate into Latin :
a. He was believed.
b. It was thought, that he had reported truly what he had seen.

11. Anco regnante, Lucumo vir divitiis potens Romam commigravit, cupidine maximè ac. spe magni honoris. Demarati Corinthii filius fuit, qui ob seditiones domo profugus, cum Tarquiniis forte consedisset, uxore ibi ducta duos filios genuit.

Cæsar.

12. Hæc eodem tempore Cæsari mandata referebatur, et legati ab Æduis et a Treviris veniebant: Ædui questum, quod Harudes, qui nuper in Galliam transportati essent, fines eorum popularentur; sese ne obsidibus quidem datis pacem Ariovisti redimere potuisse; Treviri autem, pagos centum Suevorum ad ripas Rheni consedisse, qui Rhenum transire conarentur; iis præesse Nasuam et Cimberium fratres.

Cicero.

13. Quatuor robustos filios, quinque filias, tantam domum, tantas clientelas Appius regebat et cæcus et senex. Intentum enim animum, tamquam arcum, habebat, nec languescens succumbebat senectuti. Tenebat non modo auctoritatem, sed etiam imperium in suos; metuebant servi, verebantur liberi, carum omnes habebant: vigebat in illa domo mos patrius et disciplina.

Vigril.

14. Inde toro pater Æneas sic orsus ab alto:
"Infandum, regina, jubes renovare dolorem,
Trojanas ut opes et lamentabile regnum
Eruerint Danai; quæque ipse miserrima vidi,
Et quorum pars magna fui. Quis, talia fando,
Temperet a lacrimis?

Horace.

15. Natis in usum lætitiæ scyphis
Pugnare Thracum est: tollite barbarum
   Morem, verecundumque Bacchum
      Sanguineis prohibete rixis!
Vino et lucernis Medus acinaces
Immane quantum discrepat: impium
   Lenite clamorem, sodales,
      Et cubito remanete presso!

16. Translate into Latin Prose:

What contributes to make justice above all other kingly virtues is, that it is seldom practised with a due share of applause; and those who do practise it must be influenced by greater motives than empty fame.

17. Translate into Latin verse:

'Tis sung in ancient minstrelsy
    That Phœbus wont to wear
The leaves of any pleasant tree
    Around his golden hair ;
Till Daphne, desperate with pursuit
    Of his imperious love,
At her own prayer transformed, took root,
    A laurel in the grove.

GREEK.

1. Decline ἐγὼ, σὺ, ὅστις.

2. Which declensions are parisyllabic, and which imparisyllabic? Decline κύων, χεὶρ, ἰχθὺς, πτέρυξ, γυνή.

3. What are the comparatives of δεινός, σοφός, εὐδαίμων, and ἐλαχύς?

4. Give the Greek *ordinal* numbers from one to ten, and translate τριακόσιοι, τριάκοντα.

5. Give the first futures, perfects, and second aorists of κάμνω, θνήσκω, θύω, φαίνω, παύω, μανθάνω, τίνω, τιτρώσκω.

6. Conjugate ἵστημι, giving also the English of each tense in the active voice.

7. What are the derivations of ἑκατόμβη, ἑλίκωψ, κουρίδιος, βωτιάνειρος, ἡδυεπὴς, ἀτρύγετος, ὠκύμορος, ἱστοδόκη?

8. Which of the Greek propositions govern two cases only? Show how the sense varies according as the one case, or the other, is used.

9. Give examples of the chief uses of the Middle Voice in Greek.

10. Translate—

Ὦ πάτερ, τὰ κάλλιστα πρότερόν κοτε καὶ γενναιότατα ἡμῖν ἦν,
ἔς τε πολέμους καὶ ἐς ἄγρας φοιτέοντας εὐδοκιμέειν· νῦν δὲ
ἀμφοτέρων με τούτων ἀποκληΐσας ἔχεις, οὔτε τινὰ δειλίην μοι
παριδὼν οὔτε ἀθυμίην.

Δεινόν γε, θνητοῖς ὡς ἅπαντα συμπίτνει,
καὶ τὰς ἀνάγκας οἱ νόμοι διώρισαν,
φίλους τιθέντες τούς τε πολεμιωτάτους
ἐχθρούς τε τοὺς πρὶν εὐμενεῖς ποιούμενοι.

Xenophon.

11. Οἱ μὲν δὴ στρατηγοὶ οὕτω ληφθέντες ἀνήχθησαν ὡς βασιλέα, καὶ ἀποτμηθέντες τὰς κεφαλὰς ἐτελεύτησαν, εἷς μὲν αὐτῶν Κλέαρχος ὁμολογουμένως ἐκ πάντων τῶν ἐμπείρως αὐτοῦ ἐχόντων δόξας γενέσθαι ἀνὴρ καὶ πολεμικὸς καὶ φιλοπόλεμος ἐσχάτως.

Lucian.

12. Πῶς ἂν οὖν, ὦ δέσποτα Ἑρμῆ, δυνηθείην ἐγὼ θνητὸς αὐτὸς καὶ ἄγροικος ὤν, δικαστὴς γενέσθαι παραδόξου θέας, καὶ 'μείζονος, ἢ κατὰ βουκόλον; Τὰ γὰρ τοιαῦτα κρίνειν, τῶν ἀβρῶν μᾶλλον καὶ ἀστικῶν· τὸ δ' ἐμὸν, αἶγα μὲν αἰγὸς ὁποτέρα καλλίων, καὶ δάμαλιν ἄλλης δαμάλεως, τάχ' ἂν δικάσαιμι κατὰ τὴν τέχνην.

Euripides.

13.   ὦ παῖ, τὸ λίαν οὔτ' ἐκεῖν' ἐπήνεσα,
       ὅτ' ἐς γυναῖκα Τρῳάδ' ἐξημάρτανες,
       οὔτ' αὖ τὸ νῦν σου δεῖμ' ὃ δειμαίνεις ἄγαν.
       οὐχ ὧδε κῆδος σὸν διώσεται πόσις,
       φαύλοις γυναικὸς βαρβάρου πεισθεὶς λόγοις.

14. Translate into Greek Prose:—

Phalaris of Agrigentum exceeded all other tyrants in outrageousness; for not only did he put many to death, but he had recourse to unwonted punishments. Some he cast into boiling cauldrons; some into volcanos which were on fire; some he even placed in a brazen bull and burned them. On him his people took vengeance; and withal they burned his mother and his friends.

15. Translate into Greek verse:

'Tis money that obtaineth men their friends;
Likewise their honours; and that doth conduct
To the sweet seat of highest sovereignty.
Then too, there's no one, that's to wealth a foe;
Or if foes be, they do deny their hate.

GEOMETRICAL DRAWING.

1. Draw a straight line and at one end erect a perpendicular.

2. Divide a line 4 inches long into 5 equal parts.

3. Construct an isosceles triangle on a base of 2 inches, the angle at the vertex being 100°. Make a rectangle which shall contain the same area as this triangle.

4. Describe a circle about the triangle in Question 3.

5. Construct a scale of miles and furlongs, having for its representative fraction $\frac{1}{63360}$.

6. A slope is 8 feet long and makes with the horizon an angle of 40°. Find, on a scale of ½-inch to a foot, its horizontal projection.

7. Give a perspective view of a cube standing on a horizontal plane, the plane of representation being inclined to one of its sides at an angle of 20°, and the point of sight to the right of the figure.

FRENCH.

I.

Traduisez en anglais :—

A.

1. Quelques chevaliers de Malte raisonnaient un jour du danger dont ils semblaient être menacés par les Turcs, qu'on disait venir sourdement sur eux avec cent mille hommes. L'un de ces chevaliers se nommait Samson, et avait le malheur d'être fort petit.

B.

2. La statue équestre de Pierre 1re s'élève sur le bord de la Néva, à l'une des extrémités de l'immense place d'Isaac. Son visage sévère regarde le fleuve et semble encore animer cette navigation créée par le génie du fondateur.

II.

Questions grammaticales.

1. Ecrivez l'infinitif présent, le participe présent et passé, la première personne singulière du présent, de l'imparfait, et et du prétérit de l'indicatif, ainsi que du présent et de l'imparfait du subjonctif, des verbes suivants : *disait, venir, détruire, réussir, devrais, sait.*

2. Quel est le pluriel, au masculin et au féminin, de *quelqu'un* ?

3. Quelle différence y a-t-il entre *lever* et *élever ?* entre *se lever* et *s'élever ?*

4. Nommez quelques dérivés de *raison.*

5. Expliquez la différence de nature et de signification qu'il y a entre les mots suivants : *mourais—mourrais—mourrai ;—le mort—la mort—la morte—le mors.*

III.

Translate into French :—

A.

1. What is there new, to-day? Nothing at all, for aught I know. Did you go out yesterday morning? I did. Why do you ask me.? Will you not stay and dine with us? I cannot well do so to-day, but any other day with the greatest pleasure. How much did your last journey to France cost you? Eight hundred and fifty-four francs in French money.

B.

2. On the twenty-first of June, one thousand seven hundred and eleven, (N.B.—To be translated in *letters,* not in *figures*) Swift informs Stella, "I went at noon to see Mr. Secretary at his office, and there was Lord-Treasurer ; so I killed two birds, and we were glad to see one another, and so forth, etc. The Secretary and I dined at Sir William Wyndham's, who married Lady Catherine Seymour, your acquaintance, I suppose.

GERMAN.

1. Translate into English :—

Nach Tische eilte ich mir erst einen Eindruck der ganzen Stadt zu verschaffen, und warf mich, ohne Begleiter, nur die die Himmelsgegenden merkend, ins Labyrinth von Venedig, welches, obgleich durchaus von Canälen und Canälchen durch= schnitten, durch Brücken und Brückchen wieder zusammen= hängt.

2. Translate into German :—

The Tower commanded the City. It was the "Bridle" to the too restless citizens, as the courtiers commonly called it; and it was essential not more to the safety of those well affected to the House of Commons than to the security of the House of Commons itself, that its Governor should be a man in whose good faith they had confidence.

Grammatical Questions.

1. Give the nominative plural of Hund, Bund, der Band das Band, die Bande, die Binde.

2. Decline Er, Sie, Es.

3. Name three separable and three inseparable verbs.

4. Give the German expressions corresponding to—.

> It depends on him.
> I am astonished.
> There is no harm in it.

5. Give the meanings of

Dennoch, Mitunter, Alsbald, Vormals, Vielleicht, Seitdem.

EXPERIMENTAL SCIENCES.

1. You are required to define clearly and illustrate the differences between the transmission of heat by radiation, by conduction and by convection.

2. Describe the nature of the indications afforded by a *thermometer*, a *hygrometer*, a *barometer*, and a *pyrometer*.

3. Give a description and an explanation of the plan generally adopted for ventilating coal-mines.

4. State any plans you are acquainted with for effecting the rapid evaporation of a liquid, such as water or spirit.

5. What is the cause of the steady *land-* and *sea- breezes* generally experienced in the morning and evening, on the coasts of tropical countries ?

6. What is understood by an element? Into how many classes are elements divided? Give examples, and mention the general characteristics of each class.

7. Compare the operations of the forces of gravitation, cohesion and chemical affinity upon material particles.

8. State the composition of the following substances, give their formulæ and the class of compounds to which each belongs : sulphide of iron, nitrate of potassa, magnesia, sulphate of lime, hydrochloric acid, carbonate of copper, nitric acid.

9. Describe the chemical differences between quick-lime, slaked lime and limestone, and explain how the latter may be converted into the two first.

10. It is found that a plant will continue to grow for some time in sand, even if watered with distilled water; and that the carbon and nitrogen which it contains, increase. Whence does the plant, under those circumstances, derive its supply of these elements ?

11. What are the nature and cause of the black deposit formed on depressing a cold surface into the flame of a candle or of gas ?

12. Give some illustration of the difference between the results of mixture and of combination.

13. Name some bodies which are good electrical conductors, and others which are good insulators ; and state what is an important condition to the proper insulation of any electrical apparatus.

14. Describe how you would proceed to charge an insulated body with *positive* electricity, with the employment of a rod of shellac, and state how you would afterwards prove that you had effected your object.

15. Suggest some method of applying steam to the generation of electricity, and describe how you would proceed to collect the electricity developed.

16. How would you ascertain the direction in which an electric current is circulating in a telegraph wire.

17. Electrical currents are passed, first in the same and then in opposite directions, through metal rings, suspended

side by side, so that they can move freely. Describe how the rings will affect each other in each case.

18. Explain what you understand by the direction of a voltaic current. State what would be the direction of the current produced by immersing a plate of zinc and one of platinum in acidulated water.

19. Describe and illustrate what is meant by the magnetic equator, and state whether it corresponds with the earth's equator.

20. Give an account of the instrument called the dipping needle, and of the nature of indications afforded by it. State what would occur if a bar of soft iron be held in the position taken up by the dipping needle.

NATURAL SCIENCES.

1. Define what is understood in modern science by the terms Mineral, Rock, and Fossil.

2. By what means are all the modifications presented by crystals derivable from a few simple solids called *primary forms ?*

3. What common mineral has a cubical form, an octahedral cleavage, and hardness of the fourth degree ?

4. How does such a system of grouping aid in the determination of a doubtful mineral substance ?

5. What is meant by a *crystalline,* in contra-distinction to a *crystallized* substance ?

6. What are minerals called which are never found crystallized ? Give examples of such minerals.

7. Mention six minerals which most frequently enter into the composition of rocks.

8. State the characters of the best ores of the metals which are employed in the composition of the alloy called gun-metal.

9. What primary and volcanic rocks contain most lime ?

10. Give the evidence for the submersion of the British Isles at several periods.

11. State when the last of these submersions took place, and by what phænomena it appears to have been accompanied.

12. What are the most characteristic fossils of the period of the Lias?

13. Enumerate the principal stratified rocks, in the order of succession.

14. Mention examples of the elevation of land now in progress.

15. Describe the nature of *faults* in the strata, and mention what effect they produce with relation to springs of water.

16. Give a brief description of the Geology of any district well known to you.

ROYAL MARINE LIGHT INFANTRY.

The Royal Marines are under the jurisdiction of the Admiralty, and commissions are only granted in this distinguished Corps to cadets who have been through a course of study on board H. M. Gunnery Ship "Excellent."

In order to obtain a nomination for a cadetship, it would be well for some influential friend (if possible an Admiral or other Officer of high rank in the Navy) to write to the Admiralty requesting that the candidate's name may be placed upon their list.

The nominee will, after a time, receive a communication from the Admiralty, specifying the day on which he must present himself at the Royal Naval College at Portsmouth. He will, first, be inspected by the Medical Officer at Haslar Hospital, and then undergo an examination in the usual manner at the College, when, if he be successful, a fortnight's leave is granted to provide himself with his uniform. He will then be expected to join H. M. Gunnery Ship "Excellent," on board of which he will go through a regular course of study to qualify him for passing the final Examination.

The average stay of a Cadet on board the "Excellent" is about nine months, but he can compete for the final Examination as soon as he likes; these are held every 6 months, and consequently it often happens, that the Commission is obtained in 3 or 4 months.

The Cadet's pay of 3s 8d per diem is not given until he leaves the ship. Should he have distinguished himself at the

final Examination he is allowed to join the Naval College at Portsmouth for one year, to qualify himself for a Commission in the Royal Marine Artillery, whose pay is the same as the Royal Artillery.

Promotion is granted by seniority and without purchase. The number of cadets is limited to 50.

The following is the list of books in use on board the " Excellent."

Colenso's Algebra and Arithmetic.
Jean's Trigonometry.
Simpson's Euclid.
Levizac's French Grammar.
Chapnel's History of England.
Jebb's Attack and Defence.
Macaulay's Fortification.

German, Geology and Latin are not required.

MEMORANDUM.

Admiralty, 4th February, 1856.

MARINE CADETS.

The following Regulations for the Entry, Examination, &c., of Marine Cadets are to be adopted, instead of those now in force.

1.—No Person will be nominated to a Cadetship in the Royal Marines, who is under 15, or above 17 years of age.

2.—Every Candidate, on presenting himself for Examination at the Royal Naval College at Portsmouth, will be required to produce the following Certificates :—

I. A Certificate of Age.

II. A Certificate of Good Conduct from the Masters of the Schools at which he has studied during the last three years, or, in the event of his having been privately educated, from the Clergyman of his Parish, or some person competent to judge of, and certify to, his general good conduct.

III. A solemn Declaration from his nearest of kin, that, to the best of his or her belief, he does not suffer from, nor has been subject to, any disease or infirmity of mind or body which may incapacitate him from the perfect performance of his duty as an Officer in the Corps of Royal Marines.

IV. A Certificate from one of the principal Medical Officers of the Naval Hospital at Haslar that he is of sound bodily health, and that he does not stammer, and has no other physical defect.

3.—He will then be examined in the following Subjects, and, if he passes satisfactorily, will be appointed a Marine Cadet on board the Gunnery Ship at Portsmouth :—

Writing English correctly from dictation.—Arithmetic, including Vulgar and Decimal Fractions.—First Book of Euclid.—Algebra, including Simple Equations.—General knowledge of Geography, *i.e.* of the principal Countries, Islands, Rivers, &c., of the Globe.—A competent acquaintance with the Latin, or French, or some one Modern Language.

4.—Examinations of the Cadets will be held from time to time, in order to ascertain the progress which they may have made.

5.—The final Examination of Cadets to qualify them to receive Commissions as Second Lieutenants in the Royal Marines, includes

Arithmetic.—Algebra.—Euclid, Books 1, 2, 3, 4, and part of 6.—Trigonometry, Theoretical and Practical.—History of England.—French.—Use of the Pocket Sextant.—Fortification.—Mechanical Drawing.—Gunnery.

6.—The Captain Superintendent of the Royal Naval College at Portsmouth will report to the Lords Commissioners of the Admiralty the names of those Cadets who have particularly distinguished themselves at the final Examination, and whose Conduct while on board the Gunnery Ship has been unexceptionable; with a view to their being appointed (should their Lordships think fit) to the Royal Naval College, where they will be allowed to continue a year to complete their studies. At the expiration of that period they will, if they have made satisfactory progress, be appointed to vacancies in the Artillery Companies, or be attached "on command," from their divisions, to those Companies, for Artillery Instruction, until vacancies occur.

7.—Such Cadets as have not made satisfactory progress at the end of the first year, or who fail to pass the final Examination at the end of the second year, will be discharged.

8.—All the Examinations are to be conducted by the Professor at the Royal Naval College, under the direction of the Superintendent.

9.—On joining the Gunnery Ship each Cadet must be prepared with a sum of not less than £50. for outfit, and £10. for mess, washing, and other expenses.

10.—The undermentioned sum must be paid for each Cadet to the Accountant-General of the Navy :

	Per annum.
Cadets under ordinary circumstances . .	£30.

Sons of Officers dying on full pay, or of Officers
on half pay, with large families and inade- } £15.
quate means . . . . . .

Sons of Officers killed in the Service, or of
Officers dying on full pay, whose families are } Gratis.
left in great distress . . . . .

11.—Before a Cadet can receive a Commission as a Second Lieutenant, he must deposit the sum of £80. with the Accountant-General of the Navy to provide for his being properly equipped.

12.—Cadets to wear the Blue Cloth Shell Jacket, with Red Cuffs and Collars and gold Shoulder cords, Uniform Cloth Trowsers, or White Drill Trowsers, according to Regulation.

In winter the Blue Frock Coat, according to Regulation, may be worn without a sash or belt.

Forage Cap according to Regulation.

13.—Marine Cadets are subject to Naval discipline—receive pay at the rate of 3s 8d a day, or £66 18s 4d per annum,—and are considered in all respects as Quarter Deck Petty Officers.

By Command of their Lordships,

THOS. PHINN.

MEMORANDUM.

Admiralty, 30th August, 1858.

Candidates for Naval and Marine Cadetships will be allowed a second examination, although at the time of such second examination they may exceed the respective ages of 15 and 17.

The Examination Papers are not published.

THE END.

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